Established 1835.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

An Illustrated Record of Mining, Metallurgical, Railway, Financial, Industrial, And Engineering Progress.

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper and for Transmission Abroad.*]

No. 3160.—VOL. LXVI. LONDON, SATURDAY, MARCH 14, 1896. PRICE..... SIXPENCE. BY POST, £1 4s. PER ANNUM.

A. CORNFORTH AND CO.,
STOCK BROKERS AND MINING SHARE DEALERS,
15, NEW BROAD STREET, LONDON, E.C.

BUSINESS IN ALL CLASSES OF STOCKS AND SHARES.
SPECIAL BUSINESS in KAFFIR, WEST AUSTRALIAN and all Mining Shares. Prompt Delivery made a special feature.
Mining Circular free on application.
BANKERS: CITY BANK.—Telegraphic Address: "Athelney, London."

ASSAY OFFICE AND LABORATORY.
B. KITTO'S,
30 and 31, ST. SWITHIN'S LANE, LONDON, E.C.
ASSAYS MADE OF ALL ORES. ANALYSES.
ASSAYING TAUGHT.

T. VAUGHAN HUGHES,
Assoc. Royal School of Mines, Fellow of the Institute of Chemistry, &c., London.
METALLURGIST, ASSAYER, MINING & ELECTRICAL ENGINEER.
Assays and Technical Analyses of all kinds, including Waters, Manures, Soils, and Feeding Stuffs Performed.
Sampling of Ores, &c., and Examination of Mining Properties undertaken in any part of the World.
AGENTS IN B. C. and WASHINGTON STATES, U.S.A.
Fees Moderate. List of Charges Furnished on Application.
ESTABLISHED 1888.
Address: ASSAY OFFICE, GREENFIELD, HOLYWELL, Near CHESTER, ENGLAND.

W. PELLEW HARVEY,
F.C.S., M.Fed.Inst.M.E.,
MINING ENGINEER AND METALLURGICAL CHEMIST.
VANCOUVER, BRITISH COLUMBIA.
Use A.B.C. and Moreing and Neal's Codes. Cable:—"Analysis," Vancouver, Canada.
Government Examiner under the Bureau of Mines' Act.
Canadian Agent of the Cassel Gold Extracting Company (Limited), Glasgow.
Five Years in British Columbia, and for several years at Swansea and Redruth.
Information supplied to Syndicates at moderate terms.

MINERAL PROSPECTING AND BORINGS FOR WELLS.
Large Experience. Quick Speed. Work Guaranteed.
APPLY TO
VIVIAN'S BORING & EXPLORATION CO.,
(LIMITED)
WHITEHAVEN
Deepest Borehole in England (3195 feet) put down by this Company who have completed about 56 miles of boring.
Telegraphic Address: "DIAMOND, WHITEHAVEN."

PUMPING MACHINERY.
See Illustrated Advertisement Page 350.
HATHORN, DAVEY and CO., LEEDS.

CANNOCK CHASE COAL BY CANAL AND RAILWAY.
THE COMPANY SEND COAL BY RAILWAY in Trucks to all Stations, and load Canal Boats at their extensive Wharves on the Anglesey Branch of the Birmingham Canal, adjoining the Colliery and also at Hednesford Basin, Cannock. For Prices, apply to
J. NEWLAND BROWN,
WARWICK CHAMBERS, CORPORATION STREET,
BIRMINGHAM.
Retail Department: COLMORE CHAMBERS, 1, NEWHALL ST., Birmingham.
London Office: 9 and 10, Southampton Street, High Holborn, W.C.

GOLD ASSAYING, &c.
GENTLEMEN having only a short time at their disposal can obtain SPECIAL INSTRUCTION in ASSAYING ORES of all kinds.
For Prospectuses, &c., apply to
MARTIN and PETHYBRIDGE,
ASSAYERS, &c., LABORATORY AND TESTING WORKS,
183, KING'S ROAD, CHELSEA, S.W.
Complete Analysis of Constituents of any Ore from £1 1s. to £2 2s.
GOLD ASSAYS CONDUCTED WITH CHECK, 7s. 6D. PER SAMPLE.
GOLD ORES PRACTICALLY TESTED BY STAMP BATTERY And other processes.

ASSAYING AND METALLURGY.
SPECIAL facilities are given for INSTRUCTION and PRACTICE in the ASSAYING and TREATMENT of GOLD and all other ores in the Metallurgical Laboratories of King's College, Strand, London. Persons of all ages, are admitted at any time for a period of one month or upwards. Special arrangements are made for those who cannot devote their whole time to the work. The laboratory, besides being open every day, is open 7 to 9 on Friday evenings. For further particulars apply to Professor HUNTINGTON.

J. GRANT MACLEAN,
STOCK AND SHARE BROKER, STIRLING, N.B.
TELEGRAPHIC ADDRESS—"BONDING, STIRLING."
Clients supplied gratis with Price Lists and Prospectuses explaining the whole system of dealing in Shares.
REFERENCES ON APPLICATION.
Refers to his Share Market List on page 348 of to-day's Journal.

GEORGE GREGORY AND CO.,
STOCK AND SHARE DEALERS,
LONDON, MANCHESTER, LIVERPOOL, BRIGHTON, HASTINGS.
Every Investor and Speculator, before operating, should read Gregory's "Hints to Speculators." 420 pages, Ninth Edition, Illustrated. Gratis and post free on application to
GEORGE GREGORY & CO.,
STOCK AND SHARE DEALERS,
HEAD OFFICES:
NOS. 3 AND 4, TOKENHOUSE BUILDINGS, LOTHBURY, BANK OF ENGLAND, LONDON, E.C., and BRANCHES.

ASSAY OFFICE AND ORE TESTING WORKS.
JOHN D. WARREN,
(Late HERBERT R EDMANDS)
BERKLEY GROVE WORKS,
BERKLEY ROAD, CHALK FARM, N.W.
Gold and Silver Assays, 7s. Cyanide, Amalgamation, Chlorination, or Concentration Tests, including Assays, £1 each.
Assays made of all Ores.

INSTITUTE OF MINES AND FORESTS OF BRITISH GUIANA.
Incorporated under the Local Ordinance 22 of 1890,
For the PROTECTION and DEVELOPMENT of the MINING AND FOREST INDUSTRIES OF THE COLONY.
PRESIDENT—Mr. GEORGE GARNETT (Member of the Legislature)
VICE PRESIDENT—MR. HUGH SPROSTON, Junr.
Head Office—GEORGETOWN, DEMERARA.
Official information respecting the Gold Industry and the Forests' Products of the Colony will be supplied on application to the Secretary.

BRITISH GUIANA AND THE NEW GOLD INDUSTRY.

BRITISH GUIANA BANK.
Incorporated by Ordinance of the Governor and Court of Policy of British Guiana 11th November, 1838.
Confirmed by the Queen in Council, 6th October, 1838.
SUBSCRIBED CAPITAL..... $1,400,000 | PAID-UP..... $926,520
RESERVE FUND, $288,000
CHAIRMAN: Mr. HUGH SPROSTON, JUN.
HEAD OFFICE: GEORGETOWN, DEMERARA.
MANAGER: GEO. W. LANE. | ACCOUNTANT: F. A. CONYERS Jun
BRANCH OFFICE: NEW AMSTERDAM, BERBICE,
AGENTS. London..... Smith, Payne, and Smiths.
New York..... Maitland, Phelps, and Co.
British North America Bank of British North America.
Newfoundland ..... Bank of Nova Scotia, St. John's.
Current Accounts opened in accordance with the usual practice of Bankers.
Money Received on Deposit on Interest. Bills of Exchange negotiated.
Letters of Credit issued by London Agents on Demerara free of charge.
Raw Gold Purchased or Shipped on Consignment.
Bills Collected and every other description of Banking Business transacted.

THE BANK OF AFRICA (LIMITED).
ESTABLISHED 1879.
Head Office, 113, Cannon Street, London.
SUBSCRIBED CAPITAL £1,575,000
Paid-up, £327,000; Reserve Fund, £277,138
General Manager—JAMES SIMPSON, Cape Town.
BRANCHES
Aliwal North, Cape Town, Cradock, East London, Grahamstown, Kimberley King Williams Town, Oudtshoorn, Paarl, Port Elizabeth, Queen's Town Bethlehem, Bloemfontein, Fauresmith, Harrismith, Ladybrand, Winburg Durban, Newcastle, Pietermaritzburg, Barberton, Johannesburg, Klerksdorp, Pretoria Vrijheid, Beira, Delagoa Bay, Buluwayo, Salisbury.
The Bank issues drafts, makes telegraphic remittances, buys and collects bills and conducts all kinds of banking business.
Deposits received on terms which may be ascertained on application.
R. G. DAVIS, Secretary.

ESTABLISHED 1851
BIRKBECK BANK
SOUTHAMPTON BUILDINGS, CHANCERY LANE, LONDON.
TWO-AND-A-HALF per CENT. INTEREST allowed on DEPOSITS repayable on Demand.
TWO per CENT. on CURRENT ACCOUNTS on the minimum monthly balances, when not drawn below £100.
SAVINGS DEPARTMENT.
For the encouragement of Thrift, the Bank receives small sums on Deposit and allows Interest monthly on each completed £1
The Birkbeck Almanack, with full particulars, post free,
FRANCIS RAVENSCROFT, Manager.

R. C. CAMPBELL-JOHNSTON.
(OF SWANSEA, INDIA, AND THE STATES).
FOUR YEARS IN BRITISH COLUMBIA.
MINING ENGINEER AND METALLURGIST,
POSTAL ADDRESS: BOX 40, VANCOUVER, B.C.
CABLE ADDRESS: CAMPBELL-JOHNSON, VANCOUVER.
A.B.C. CODE.
MINES EXAMINED AND REPORTED ON, DEVELOPED AND MANAGED.
Furnaces, Mills, and Mining Plants Planned and Erected.
ORES BOUGHT AND SOLD.

CHARLETON AND CO.,
A. G. CHARLETON, A.R.S.M., F. W. GREY, A.R.S.M.,
MINING ENGINEERS AND MINE MANAGERS,
undertake Inspections and Reports and the Design of Mining and Milling Plant of all kinds.
Dashwood House, 9, New Broad Street, E.C.
Cable Address: "Ingressio." Bedford McNeil's and Broomhall's Codes.

DONALD CLARK, B.C.E., M.E.,
BAIRNSDALE, VICTORIA,
Director of the North Gippsland School of Mines (which has the most perfect Gold-testing Machinery in Australia),
REPORTS ON MINES AND MINING PROPERTIES.
Gippsland a Speciality.

ALBERT H. HALDER,
Consulting Engineer, F.R.I.B.A., Memb. Fed. Inst. M.E., Memb. Am. Inst. M.E., Memb. Austrian Inst. C.E., and Archts.
GENERAL MANAGER,
LEECHDALE (Rhodesia) DEV. CO., LTD.
REPRESENTATIVE CIVIL ENG. EXPL. SYND.
5, COPTHALL BUILDINGS, LONDON, E.C.
Telegraphic Address: "HALDER," Buluwayo.
Postal Address: P.O., Box 126, Buluwayo.
MINING BUSINESS MATTERS:
A.B.C. Code, Fourth Edition: Bedford McNeil; Moreing and Neal.
OFFICES:
JOHANNESBURG, LONDON, and PARIS.

APPLEBY'S HANDBOOK of MACHINERY.
By C. J. APPLEBY, M.Inst.C.E.
New Edition, entirely re-written, with numerous Illustrations and Prices. The Sections now ready relate to (1.) Prime Movers (Engines, Turbines, &c.), (4.) Machine Tools and Accessories (6.) Mining, Colonial, and Manufacturing Machinery. Cloth, 3s. 6d. each Section.
MINING MACHINERY separately, cloth, 2s. 6d.
E. and F. N. SPON, 125, Strand, London, W.C.

CROSBY LOCKWOOD & SON'S BOOKS ON MINING.
By M. EISSLER:—
Metallurgy of Gold. Fourth Edition, Enlarged to 700 pp. With Folding Plates and Working Drawings. 8vo., 16s. cloth.
Cyanide Process of Gold Extraction. 8vo., 7s. 6d. cloth.
Metallurgy of Silver. Crown 8vo., 10s. 6d. cloth.
Metallurgy of Argentiferous Lead. 12s. 6d. cloth.
Handbook on Modern Explosives. Crown 8vo., 10s. 6d.
Prospector's Handbook, by J. W. ANDERSON. Sixth Edition, enlarged, crown 8vo., 3s. 6d. cloth; 4s. 6d. leather.
Machinery for Metalliferous Mines, by E. HENRY DAVIES. Crown 8vo., 12s. 6d. cloth.
Metalliferous Minerals and Mining, by D. C. DAVIES. Fifth Edition, by E. HENRY DAVIES. Crown 8vo., 12s. 6d. cloth.
Earthy and other Minerals and Mining, by D. C. DAVIES, Third Edition, by E. HENRY DAVIES. Crown 8vo., 12s. 6d. cloth.
Miner's Handbook, by Prof. J. MILNE. 7s. 6d. leather.
Pocket-Book for Miners and Metallurgists, by F. DANVERS POWER. F'cap 8vo., 9s. leather.
Colliery Manager's Handbook, by CALEB PAMELY. Third Edition, enlarged, medium 8vo., 25s. cloth.
London: CROSBY LOCKWOOD & SON, 7, Stationers' Hall Court, E.C

NOW READY.
GOLD MINING:
BRIEFLY DESCRIBED,
WITH HINTS TO INVESTORS,
AND AN
APPENDIX ON THE COLONIAL GOLD FIELDS
BY RICHARD J. MIDDLETON,
F.G.S.E., ETC.
PRICE ONE SHILLING.
LONDON:
Middleton's Mining Agency, Broad Street House, E.C.

GOLDEN BRITISH COLUMBIA.
FOR INFORMATION and REPORTS on MINES, apply to G. MONCKTON, M.E., M.G.A., Member Mining Society N.S., Lecturer on Mining, Vancouver School of Mines. Business conducted in absence by A. J. COLQUHOUN, M.E., of California and Mexico, Lecturer on Chemistry and Metallurgy. Mines Bought and Sold and all Mining Work carried out.

For Index to Advertisements see Page 326.

For Literary Contents see Page 338.

INDEX TO ADVERTISEMENTS.

(THOSE WITHOUT NUMBER OF PAGE DO NOT APPEAR IN THIS ISSUE.)

	PAGE
Appleby, Bros. ... ...Handbook of Machinery	325
Austin, J. B. ... Mineralogist	349
Australian Gold Recovery Company	338
Bank of Africa, (Ltd.)	325
Blake and Knowles (Limited) ... Pumps	327
British Guiana Bank	325
Bennett, Sons, and Co. ... Fuse Manufacturers	352
Birkbeck Bank	325
Bowes-Scott and Western ... Mining Machinery	352
Bute Works Supply Company (Limited) ... Steel Rails, &c.	338
Business Cards—	
Baxter, W. H. ... Stonebreaking Machinery	349
Commans, R. E. ... Aerial Ropeways	349
Clarkson-Stanfield Concentrator (Ltd.) ... Dry Concentration	349
Chatterton, George J. ... Tube Maker	349
Davis and Son ... Mining Instruments	349
Davis and Sons ... Mining Machinery	349
Fraser and Chalmers (Ltd.) ... Mining Machinery	349
Gates Ironworks Co. ... Rock and Ore Breaker	349
Gilkes and Co. ... Turbines	349
King, Frederick J. ... Magnetic Ore Separators	349
Krauss, F. M., F.G.S., F.L.S. ... Mining Machinery	349
Larmuth, Thomas, and Co. ...	349
Lubrig Coal and Ore Dressing Appliances (Ltd.) ...	349
Nobel's Explosives Co, (Ltd.) ... Water Cartridges, &c.	349
Pool, J. and F. ... Metal Perforators	349
Robey and Co. (Ltd.) ... Engines and Ore Crushers	349
Schram and Co. ... Rock Drills	349
Sheppard and Sons (Ltd.)... Coal Washing Machinery	349
United Asbestos Co. (Ltd.) ... Asbestos	325
Campbell-Johnston, R. C. ... Mining Engineer	325
Cannock Chase Colliery Company ... Coal Exporters	350
Cassel Gold Extracting Co. (Ltd.) ... MacArthur-Forrest Process	328
Champion Rock Borer Co. ... Rock Borers	325
Charleton, A. G. ... Mining Engineer	325
Clark, Donald ... Mining Engineer	329
Clarkson-Stanfield Concentrator (Ltd.) ... Dry Concentration	338
Companies and Legal Announcements ...	349
Clayton and Shuttleworth... ... Engineers	325
Cornforth and Co. ... Share Dealers	350
Cotton Powder Co, (Ltd.) ... Explosives	350
Cr s and Gerlach ... Publishers	325
Crosby Lockwood and Son's ... Books on Mining	—
Curtis and Harvey... ... Gunpowder Manufacturers	349
Davies, Henry ... Mining Engineer	329
Davis and Son ... Mining, &c., Instruments	

	PAGE
Daw, A. and Z. ... Rock Drills	327
Delta Metal Co. (Ltd.) ... Metal	327
Easton, Anderson, and Goolden ... Mining Machinery &c.	327
Elliman, Sons, and Co. ... Embrocation	352
Epps and Co. ... Cocoa	327
For Sale ...	348
Fontaine Company	327
Francis and Jenkins ... Copper Works Ladles	—
Fraser and Chalmers (Ltd.)... Mining Machinery	326
Frictionless Engine Packing Company ... Engine Packing, &c.	—
Gates Ironworks Co. ... Rock and Ore Breaker	351
Gilkes and Co. ... Turbines	—
Golden British Columbia ...	325
Green, G. ... Ore Dressing Machinery	—
Gregory, G., and Co. ...Stock and Share Dealers	325
Griffin and Co.'s Publications ...	—
Halder, Albert H. ... Consulting Engineer	325
Harvey, Julius and Co. ... Mining Machinery	350
Hathorn, Davey and Co ... Pumping Engines	350
Harvey, W. Pellew ... Mining Engineer	325
Holloway's Ointment and Pills ...	—
Holman Bros. ... Rock Drills and Compressors	329
Howes, S. ... Turbines	328
Hughes, T. Vaughan ... Mining Engineer	325
Humboldt Engineering Works Co. ... Mining Machinery	351
Huntington, Professor ...Instruction in Assaying	325
Ingersoll-Sergeant Drill Co, of America, Rock Drills and Compressors	326
Institute of Mines and Forests of British Guiana ...	325
Jones, J. A. ... Mining Engineer	338
Kitto, B. ... Assay Office	325
Krupp Grusonwerk ... Ore Extraction Machinery	328
Lambert's Wharfage Company ...	338
Larmuth, T., and Co ... Mining Machinery	351
Maclean, J. Grant ... Share and Iron Broker	325
Marsden, H. R. ... Stone Breakers and Ore Crushers	352
Martin and Pethybridge ... Assay Laboratory	325
Merton and Co. ... Aluminium	328
Middleton, Richard J. ... Mining Agency	325
Negretti and Zambra ... Surveying and Mining Instrument	327
Nobel's Explosives Co. (Ltd.) ... Water Cartridges, &c.	—
Parkin ... Signal Bells	350
Pass and Son ... Buyers of Lead Ashes, &c.	338
Phosphor Bronze Co. (Ltd.)... ... Bells Metal, &c.	327
Piggott and Co. ... Welded and Rivetted Pipes	—

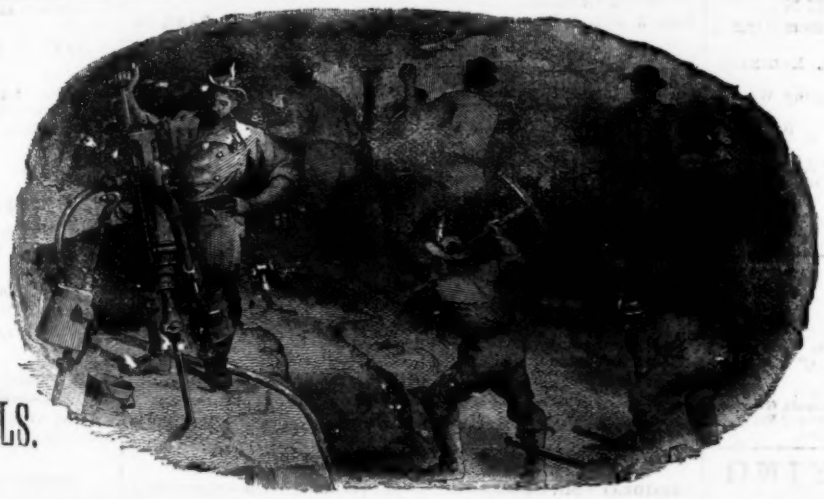
	PAGE
Publications—	
Crosby Lockwood and Son The Colliery Manager's Handbook	
Ireland, James ... Colliery Ready Reckoner	338
Karuth, Frank ... ...Notes on the Philippine Islands	350
Louis, Henry ... ... A Hand-book of Gold Milling	350
Nicholas, William ... The Golden Quartz Reefs of Australia	350
Rose, James ... ... New Guide to the Iron Trade	350
Safford, Frank ... ...The Law of Merchandise Marks	350
Spon, E. and F. N. ... Stanley's Treatise on Surveying, &c.	350
Tacknote... ... ... Form of Licence to Explore	350
Wilkinson, W. P. ...History of the Holmbush, Redmoor, &c.	350
Railway Passengers' Assurance Company	350
Robey and Co. ... ... Engines and Ore Crushers	349
Roburite Explosives Co. (Ltd.) ... ... Explosives	—
Ropeway Syndicate ... ... Aerial Wire Ropeways	351
Royal Mining Academy, Clausthal...	—
Sales by Auction	348
Sandycroft Foundry Company ... ... Electrical Machinery	—
Schram and Co. ... ... Rock Drills and Compressors	329
Shipping—	
Donald Currie and Co.	349
Union Steamship Company	349
Smith, Thomas and Sons ... ... Engineers	352
Stanley, W. F. ... ... Mathematical Instruments	326
Stewart and Clydesdale ... ... Iron and Steel Tubes	—
Stewart and Co. (Ltd.) ... ... Engineers and Boiler Makers	—
Tangyes Limited ... ... Engines, &c.	—
To Let	348
Tonge, Thomas ... ... Mining Agent	349
Tuck and Co. (Ltd.) ... ... Packing Manufacturers	—
United Asbestos Co. (Ltd.)... ... ... Asbestos	—
Vivian's Boring Co, (Ltd.) ... ... Boring Machinery	325
Walker Brothers ... ...Air Compressing Engines	—
Wanted	348
Warren, John D. ... ...Assay Office	325
Wiggin and Co. (Ltd.) ... ... Nickel Refiners	338

ROCK DRILLS FOR STEAM OR COMPRESSED AIR.

AIR COMPRESSORS.

COAL MINING MACHINE.

DIAMOND & PROSPECTING DRILLS.



SEND FOR CATALOGUE.

TELEGRAMS:

"ENYAM, LONDON."

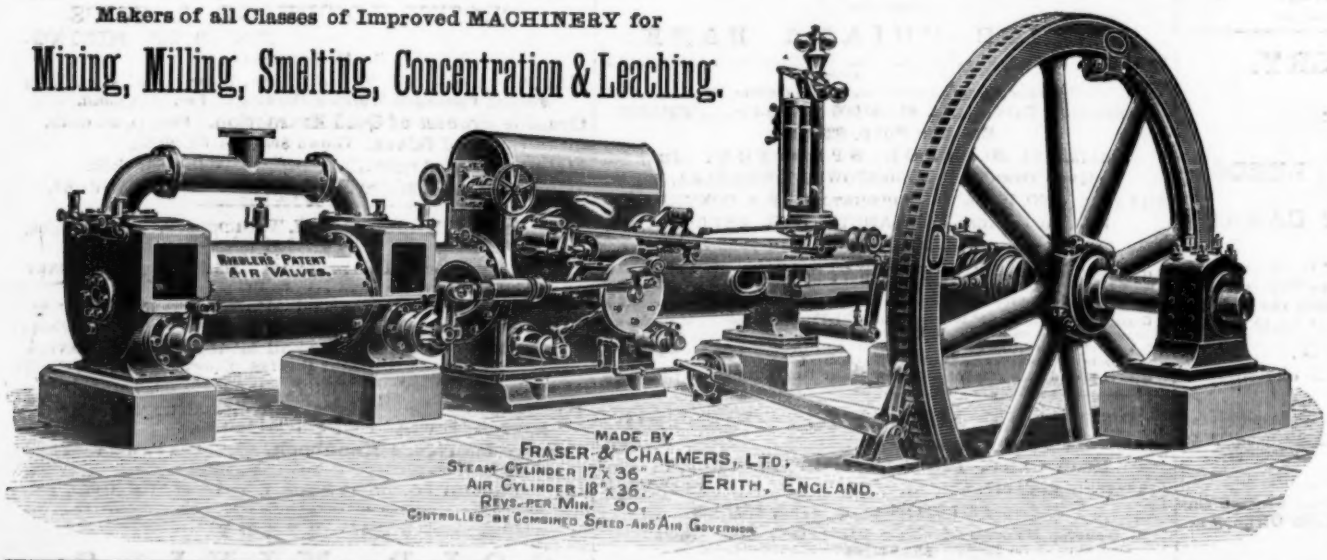
A. E. W. GWYN, Agent.

THE INGERSOLL-SERGEANT DRILL CO., 114a, QUEEN VICTORIA STREET, LONDON, E.C.

FRASER AND CHALMERS, LIMITED.

Makers of all Classes of Improved MACHINERY for

Mining, Milling, Smelting, Concentration & Leaching.



RIEDLER SYSTEM

Of PUMPS and COMPRESSORS insuring highest efficiency. The use of mechanically controlled valves allows of high piston speed under heavy pressure, resulting in reduction of size of engine for given duty and greater economy of steam. At Paris the Riedler system effected a great economy of fuel in the Compressed Air Plant. At the Butte and Boston Mine, Montana, the Riedler Pump effected a saving of 60 per cent. of fuel over pumps previously used.

Send for Pamphlet.

Works:
ERITH, KENT;
CHICAGO, ILL., U.S.A.

Office:
43, Threadneedle St., LONDON, EC.

W. F. STANLEY

Mathematical Instrument Manufacturer

To H.M. Government, Council of India, Science and Art Department, Admiralty, &c.

MINING, SURVEYING AND DRAWING INSTRUMENTS

OF EVERY DESCRIPTION, OF THE HIGHEST QUALITY AND FINISH, AT THE MOST MODERATE PRICES.

Price Lists post free.

Address—Great Turnstile, Holborn, London, W.C.

GOLD MEDAL, Inventions Exhibition, 1885
" " Mining " 1890

THE WESTERN DAILY MERCURY.
The Paper for News.
The Paper for Advertisements.
The Paper for the People.

THE WESTERN WEEKLY MERCURY
The Paper for the Household.

These Journals have an enormous circulation throughout Devon and Cornwall, and are conveyed by specially chartered trains.
OFFICES: PLYMOUTH.

LIVERPOOL JOURNAL OF COMMERCE
Is the best FINANCIAL and COMMERCIAL PAPER in the Provinces.
Is now Enlarged to Eight Pages.
Contains more Commercial and Shipping News than any other Morning Paper.
Proprietor, CHARLES BIRCHALL, 32, Castle Street, Liverpool
LONDON OFFICE.—38, GRACECHURCH STREET.

THE INDIAN and EASTERN ENGINEER
AN
ILLUSTRATED WEEKLY JOURNAL
FOR
ENGINEERS IN INDIA AND THE EAST.

The INDIAN AND EASTERN ENGINEER contains the latest and most authentic information on all subjects connected with Engineering enterprise in India and the East.

Correspondence invited on any subject which may be of interest to the profession.

RATE OF SUBSCRIPTION (payable in advance, including a copy of the INDIAN AND EASTERN ENGINEER'S DIARY, and postage):—

Indian Rates.	English Rates.
Yearly ..... Rs. 20	Yearly 40/-

Published at 137, Canning Street, Calcutta.
London Office: 28, Victoria Street, Westminster, S.W.

EASTON, ANDERSON, & GOOLDEN, Limited,

3, Whitehall Place, London, S.W.,

AND

Erith Iron Works, Erith, Kent.

JOHANNESBURG ... F. W. STOKER, Esq. AUSTRALIA ... Messrs. HARROLD BROS. TASMANIA ... SALISBURY FOUNDRY CO

MANUFACTURERS OF

MINING MACHINERY of every description ELECTRICAL HAULING and WINDING PLANTS.

ELECTRICAL PUMPING PLANTS. ELECTRICAL ROCK DRILLS.

Plants have recently been supplied to the following amongst other Mines:—

THE CHAMP D'OR DEEP LEVEL GOLD MINING COMPANY.
THE CASSEL COLLIERY COMPANY.
VILLAGE MAIN REEF GOLD MINING COMPANY.
THE GOLD FIELDS DEEP.
METROPOLITAN GOLD MINING COMPANY.
MEYER AND CHARLTON GOLD MINING COMPANY.
ROODEPOORT DEEP LEVEL GOLD MINE COMPANY.
MAY CONSOLIDATED GOLD MINING COMPANY.
GEORGE GOCH GOLD MINING COMPANY.
SALISBURY JUBILEE JOINT MILL.
MOODIES GOLD MINING EXPLORATION COMPANY (LIMITED).
WITWATERSRAND GOLD MINING COMPANY.
FERREIRA GOLD MINING COMPANY.
NIGEL GOLD MINE COMPANY.

Sole Manufacturers of the NIAGARA CRUSHER, PULVERISER, AND CONCENTRATOR. The most Successful MACHINE in the WORLD. A 5-foot QUARTZ MACHINE will do more and better Work than five head of STAMPS. Costs half the Price. Uses half the Power. Repairs do not exceed 2½ per cent. per annum on first cost.

Any Ore however Refractory is speedily reduced to a Uniform Power of any desired fineness, while the CONCENTRATOR SEPARATES THE VALUABLE ORE FROM THE MATRIX WITHOUT EXTRA POWER. For full particulars of the NIAGARA PULVERISER, apply to the NIAGARA PULVERISER SYNDICATE (LIMITED), 3, WHITEHALL PLACE, S.W.

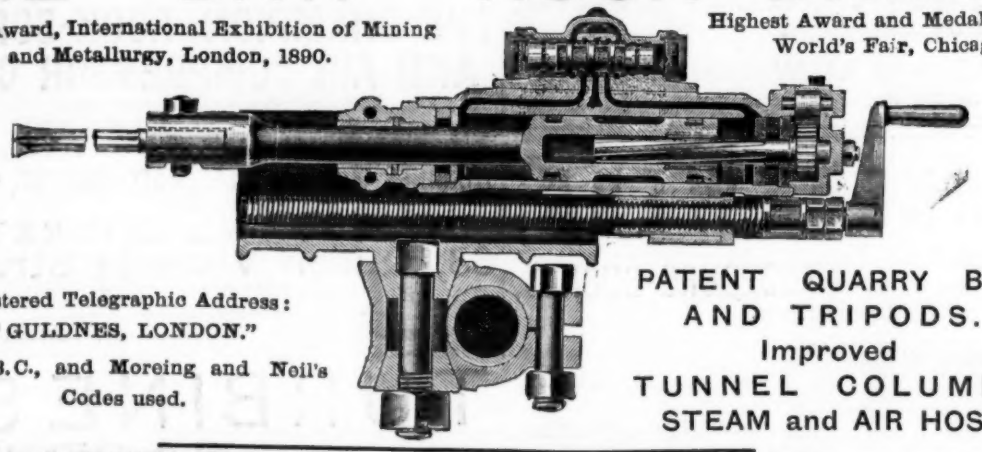
EASTON, ANDERSON, and GOOLDEN, Limited, 3, Whitehall Place, S.W.

Telegrams EGYPTIAN, LONDON. Telephone: 3695.

THE "DAW" ROCK DRILL.

Highest Award, International Exhibition of Mining and Metallurgy, London, 1890.

Highest Award and Medal, World's Fair, Chicago.



Registered Telegraphic Address: "GULDNES, LONDON."
A1, A.B.C., and Moreing and Neil's Codes used.

PATENT QUARRY BARS AND TRIPODS.
Improved TUNNEL COLUMNS.
STEAM and AIR HOSE.

Estimates for ROCK BORING and GENERAL MINING MACHINERY on Application.

PATENTEES AND MANUFACTURERS:

A. & Z. DAW, 11, QUEEN VICTORIA STREET, LONDON, E.C.

ALSO SOLE MAKERS OF

THE "DAW" AIR COMPRESSING ENGINES.

CONTRACTS for all KINDS of ROCK DRILLING UNDERTAKEN.

ACCIDENTS TO LIFE & LIMB, RAILWAY ACCIDENTS, EMPLOYERS' LIABILITY,

INSURED AGAINST BY THE

RAILWAY PASSENGERS' ASSURANCE COMPANY,

Established 1849. CAPITAL £1,000,000. COMPENSATION PAID, £3,600,000.

64, CORNHILL, LONDON. A. VIAN, Secretary.

EVERY VARIETY OF
PUMPING MACHINERY
BLAKE & KNOWLES LD
117 QUEEN VICTORIA ST LONDON
95000 PUMPS SOLD
200000 PUMPS IN MINES

MINING PUMPS of the BEST TYPE, A SPECIALITY.

FONTAINE CO.,

PERFORATING WORKS, AIX-LA-CHAPELLE, GERMANY.

(ESTABLISHED 1857.)

PRICES ON APPLICATION.

PERFORATED PLATES FOR

Sieving and Sorting purposes, round, square, and taper holes.
Separation and Cleaning of Grain.
Drying Hops, Tobacco, Chicory, Bones, Manures.
Breweries, Chemical Works, Cement Works, Corn Mills, &c.
Specialities for Sugar Manufactories Refineries.
Copper Sheets perforated with our elongated Conical Holes. Filterpress Plates, &c.

We produce our Perforated Sheets by very powerful machinery, perforating at one stroke the whole breadth of the sheet; we can, therefore, supply irreproachable Wares at very Low Prices. We also furnish all Machinery and Tools of every description for Perforating Works.

DELTA METAL

FOR ALL ENGINEERING WORK.

STRONGER AND MORE DURABLE THAN STEEL.

Specially Adapted for MINING WORK on account of its very high Resistance to Corrosion.

DELTA

CAST, FORGED, STAMPED, ROLLED, DRAWN.

For full Particulars and Prices apply to

THE DELTA METAL COMPANY (Ltd).

110, Cannon Street, London, E.C.

Telegrams:—"DELTA," London. Telephone No. 11292.

BREAKFAST—SUPPER.

EPPS'S

GRATEFUL—COMFORTING.

COCOA

BOILING WATER OR MILK.

THE AUSTRALIAN MINING STANDARD

IS THE

ONLY RECORD OF MINING, FINANCIAL, and ENGINEERING PROGRESS IN THE SOUTHERN HEMISPHERE.

PUBLISHED WEEKLY. ILLUSTRATED.

Subscription, 30s. per annum (payable in advance).

Dr. E. D. PETERS, Jun., says:—"*The Mining Standard* is the best Mining Journal in the World, save one."

THE AUSTRALIAN MINING STANDARD COMPANY, LIMITED.

Printers and Publishers,

SYDNEY AND MELBOURNE

NEGRETTI AND ZAMBRA'S,

SURVEYING & MINING INSTRUMENTS.

Theodolites, Levels, Circumferenters, Miners' Dials, Compasses, Drawing Instruments, Levelling Staves, Barometers, Thermometers, Air Meters, Binoculars, Telescopes, &c., &c.

ILLUSTRATED PRICE LISTS AND ESTIMATES POST FREE TO ALL PARTS OF THE WORLD.

NEGRETTI & ZAMBRA,

Scientific Instrument Makers to Her Majesty the Queen and British and Foreign Governments.

38, HOLBORN VIADUCT.

BRANCHES: 45, Cornhill, and 122, Regent Street, London.

ONLY GOLD MEDAL FOR ALLOYS, INVENTIONS EXHIBITION.

"PHOSPHOR-BRONZE." (Cog Wheel Brand.)

The Best Alloys for all Wearing parts of Machinery, Bearings, &c.

BEWARE OF ALL IMITATIONS, & SPECIFY THE COMPANY'S MAKE.

BULL'S METAL, Ingots, Forgings, Castings, Stampings, Rods and Sheet. } Specially adapted for Mining Work.

The Phosphor Bronze Company

(LIMITED).

87, SUMNER STREET, SOUTHWARK, LONDON, S.E.

NORTH QUEENSLAND REGISTER.

THE LEADING NORTH QUEENSLAND WEEKLY.

PUBLISHED AT CHARTERS TOWERS, NORTH QUEENSLAND.

MINING A SPECIALITY.

Subscription £1 4s. per annum; including postage to Great Britain £1 5s. per annum.

Address communications to—

THE NORTHERN MINER PRINTING AND PUBLISHING COMPANY CHARTERS TOWERS, QUEENSLAND.

The COUNTY GENTLEMAN'S PAPER for Cheshire, Shropshire, and North Wales is

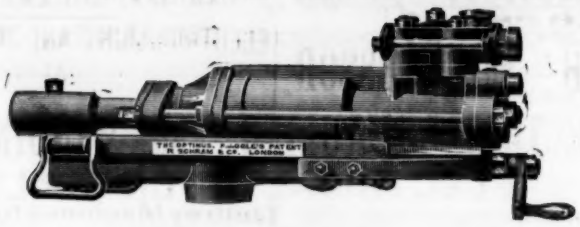
THE CHESTER COURANT.

(ESTABLISHED 1730.)

The CHESTER COURANT goes into all the best houses and has a Subscription List of remarkable scope and character.

It is a most suitable medium for advertising Patent Machinery used on large Farms or County Estates

REVOLUTION IN ROCK DRILLING



"OPTIMUS" COMPOUND ROCK DRILL.

(P. J. OGLE'S PATENT.)

Consumes 40 per cent. less Compressed Air than any other Drill at the same time giving the most effectual results.

AIR COMPRESSORS,

WITH COMPOUND AIR AND STEAM CYLINDERS,

Fitted with SCHRAM'S Inlet and Outlet Valves giving the greatest efficiency.

"SCHRAM'S" IMPROVED ROCK DRILLS,

SUPPLIED TO THE INDIAN, COLONIAL, AND OTHER GOVERNMENTS.

2500 IN USE IN ALL PARTS OF THE WORLD.

Hand-Power Diamond Prospecting Drills.

ESTIMATES AND FULL PARTICULARS ON APPLICATION.

RICHARD SCHRAM & CO., 17a, Great George St., Westminster, S.W.

TELEGRAMS "SCHRAM, LONDON," A1, A.B.C. and The Engineering Telegraph Codes Used.

FRIED. KRUPP GRUSONWERK,

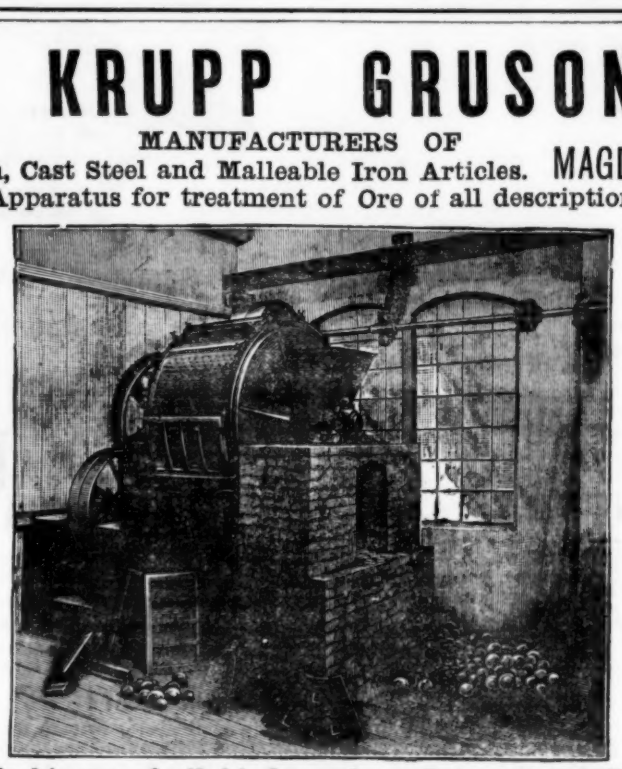
MANUFACTURERS OF

1. Chilled Cast Iron, Cast Steel and Malleable Iron Articles. MAGDEBURG-BUCKAU.
2. Machinery and Apparatus for treatment of Ore of all description.

GOLD EXTRACTION MACHINERY.

(Laszlo' Amalgamators giving 20 to 40 per cent. more Gold than others).

SILVER EXTRACTION MACHINERY.



STAMP BATTERIES.

Patent Ball Mills.

(Dry Crushers).

ORE-CONCENTRATION

DRY SEPARATOR

OF

PAPE-HENNEBERG.

3. Disintegrating Machinery of all kinds, such as Patent Ball Mills for Ores, Quartz, Cement, Basic Slag Grinding, &c. Excelsior Mills for Food Products, also for Tanneries, Chemical Factories, Sugar Factories, &c. Stone Breakers, Roller Mills, Crushers, &c., &c., Runners.
4. Whole installation for Cement, Porcelain, Emery, Manure, Gypsum, Bone, & Ore Mills.

HYDRAULIC PRESSES. LEAD PIPE PRESSES. COMBINED COFFEE GRINDING AND CLEANSING MILLS. ROLLS FOR ALL METALS. CRANES. RAILWAY MATERIAL.

CATALOGUES IN ALL LANGUAGES.

SOLE AGENT: **W. STAMM, 3, EAST INDIA AVENUE, E.C.**

"CHAMPION" ROCK DRILLS

Have all the latest improvements resulting from 19 years' practical experience in constant work.

Unrivalled for efficiency and durability in Sinking Shafts, Driving Levels & Tunnels.

THE CHAMPION ROCK-BORER AND AIR COMPRESSOR CO.

SOLE PROPRIETORS AND MANUFACTURERS,

E. P. and H. P. VACHER,

MAKERS OF ROCK DRILLS, AIR COMPRESSORS,

TURBINES, WATER WHEELS, WATER MOTORS, RAMS

AND OTHER

MINING MACHINERY.

63, Queen Victoria Street,

LONDON, E.C.

Telegraphic Address: "TURNSCREW, LONDON."

TURBINES.

Little Giant Turbine.

FACTS!

Unlike other Turbines, with from 12 to 24 water inlets to supply it with water, our LITTLE GIANT Wheel has one Vertical Gate only, so that no waste of water, power, and no stoppages takes place owing to small rubbish lodging in the gates as in other types of turbines.

FULL PARTICULARS SENT FREE.

S. HOWES, HYDRAULIC ENGINEER,

64, MARK LANE, LONDON,

AND AT SILVER CREEK, N.Y., U.S.A. E.C.

THE ADELAIDE OBSERVER.

Mining men and others in all parts of the world, who wish to secure the most complete budget of Australian news, and particularly of Mining Intelligence, will do well to have THE ADELAIDE OBSERVER regularly posted to them.

Special attention is given to Mining operations in Western Australia as well as in all other parts of Australasia.

THE ADELAIDE OBSERVER, Price Sixpence. Posted abroad, 7s. 6d. per quarter, or £1 10s. per annum.

HEAD OFFICE—GRENFELL STREET, ADELAIDE, SOUTH AUSTRALIA.

LONDON OFFICE—30, FLEET STREET.

THE OBSERVER is a splendid medium for Advertisements of Mining Machinery and requisites.

Advertisements received by all the principal London Agents or at the London address, given above.

For **PURE ALUMINIUM**

98 to 99½ per cent. (98 per cent. minimum guaranteed) in

INGOTS, STICKS, & ROLLING SLABS;

ALSO FOR

SHEETS, &c., AND

FERRO-ALUMINIUM.

ALUMINIUM.

APPLY TO

HENRY R. MERTON & CO.,

2, Metal Exchange Buildings, Leadenhall Avenue.

LONDON, E.C.

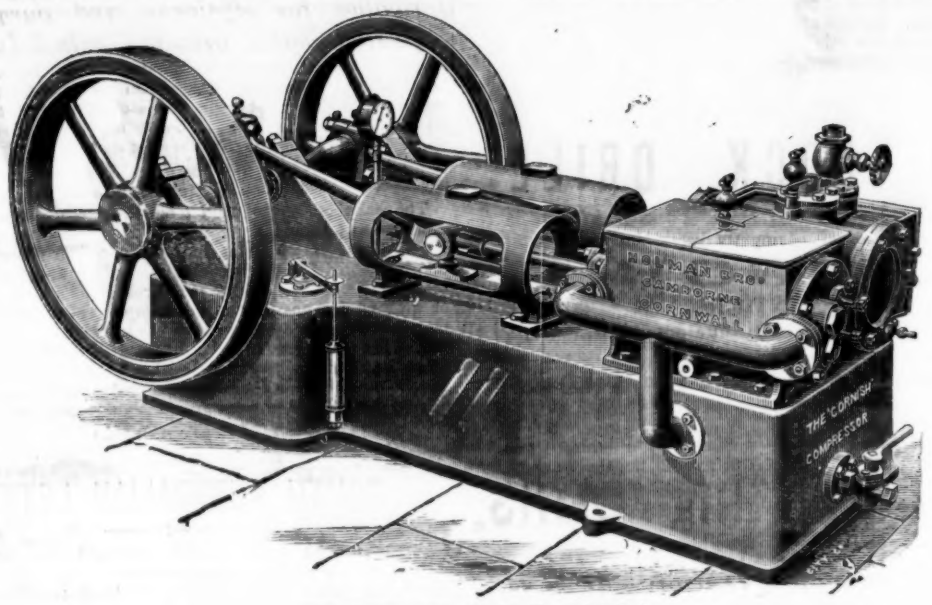
AGENTS FOR THE BRITISH ALUMINIUM COMPANY, LIMITED.

HOLMAN Bros., Camborne, Cornwall.

ESTABLISHED 1839.

Patentees and Sole Makers of

"THE CORNISH" ROCK DRILL and "THE CORNISH" COMPRESSOR.



RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS**, equal to five times the Speed of Hand Labour

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES**, and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

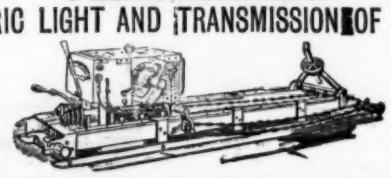
Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

London Offices: 7 and 9, LEADENHALL BUILDINGS, E.C.

JOHN DAVIS & SON,

ALL SAINTS WORKS, DERBY;
118, NEWGATE STREET, LONDON, E.C.,
CARDIFF, JOHANNESBURG, CALCUTTA.

ELECTRIC LIGHT AND TRANSMISSION OF POWER.



Jeffrey Machines for Undercutting Coal,

WORKED EITHER BY COMPRESSED AIR OR ELECTRICITY.

OVER 600 IN DAILY USE.

ELECTRIC
BLASTING APPARATUS.
HIGH OR LOW TENSION
EXPLODERS,
CABLES, FUSES.

Electric Signals and Telephones.

MINING AND
SURVEYING INSTRUMENTS,
THEODOLITES, HEDLEY
DIALS, LEVELS,
CLINOMETERS.

MINERS' SAFETY LAMPS.

ALL PARTS INTERCHANGEABLE.

CATALOGUES UPON APPLICATION.

SEC. A. MATHEMATICAL & MINING INSTRUMENTS, MINERS' LAMPS, &c.
SEC. B. ELECTRICAL PLANT AND STORES.

THE STAFFORDSHIRE ADVERTISER.

ESTABLISHED 1795.

The Principal County Paper in the Midlands.

Advertisers will find it the BEST MEDIUM for reaching superior class of readers over large area centred by Staffordshire fifth county in population and sixth in wealth.

Published at Stafford every SATURDAY (Price Twopence), and to be obtained at Euston and Principal Bookstalls between London Liverpool, and Manchester

AWARDS: CRYSTAL PALACE, 1890; TASMANIA, 1891; KIMBERLEY, 1892.

CONCENTRATION.

The Clarkson-Stanfield Concentrator (Limited).

In the CLARKSON-STANFIELD process of Concentrating Refractory and Complex Ores no water is required; dust is reduced to a minimum; the loss of Mineral through water-borne Slimes is obviated.

OUTPUT ½ TO 2 TONS PER HOUR, ACCORDING TO SIZE OF MACHINE.

CONCENTRATOR TO BE SEEN IN OPERATION AT THE COMPANY'S ONLY ADDRESS

6, COLONIAL AVENUE, MINORIES, LONDON, E.

The Machine is superior to Sieves for Sizing Homogeneous Substances, such as Emery, Sand, and Powders, and may be used to great advantage in the preparation of Ochre.

N.B.—The owners of the Carndochan Mine, near Bala, North Wales, will, by arrangement, show their CLARKSON-STANFIELD plant working on a Refractory Low Grade Gold Ore.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

103 Richard Roseby, 1, Burnyeat's Terrace, Chapel Street, Whitehaven.—Improved water gauge for use in the ventilation of coal mines.—February 24.

4104 Alfred Blectynden, 10, St. George's Crescent, Liverpool.—Improvements in apparatus for controlling auxiliary engines for reversing and starting steam engines.—February 24.

4114 William Railton, Richard Campell, and Samuel G. Railton, 6, Lord Street, Liverpool.—Improvements in or relating to steam boilers, furnaces, or flues.—February 24.

4153 Richard Cox, 97, Newgate Street, London.—Improvements in stone-sawing machines.—February 24.

4153 Samuel Sydney Brombead, 97, Newgate Street, London.—A double expansion gas engine.—February 24.

4185 Emil Lawrence Opperman, 27, Martin's Lane, Cannon Street, London.—A new or improved process for amalgamating and extracting gold or other suitable metals from dry crushed ore.—February 25.

4200 James Macewan Ross, 82, St. Vincent Street, Glasgow.—Improvements in apparatus for dressing and polishing stone, metal, or other surfaces, and for boiling or drilling.—February 25.

4245 Henry Percy Bolt, 28, Southampton Buildings, Chancery Lane, London.—Improvements in gas or oil traction cars.—February 25.

4292 Robert Frank Poclin and Harry Simpson Poclin, St. Margaret's Foundry, Watling Street, Leicester.—Improvements in stone-breaking ore, crushing and grinding machines.—February 26.

4300 Ernest Peterson, 28, Southampton Buildings, Chancery Lane, London.—Apparatus for automatically supplying feed water to steam boilers and for heating.

4320 John Holloway, 2, Cooper's Lane, Smethwick, Staffordshire.—Improvement in steam engine.—February 27.

4332 Joseph Ashby and Frederick Barker Hill, 11, Southampton Buildings, Chancery Lane, London.—Improved means for obtaining a forced draught in steam boilers and other furnaces.—February 27.

4422 The Exploring and Gold Mining Association (Limited), 28, Southampton Buildings, Chancery Lane, London.—A process for recovery of zinc and from blende ores.—February 27.

4451 William James Orr and Silas Walmesley, 70, Market Street, Manchester. Improvements in apparatus for distributing fluid, minerals, powder, fibrous material, and the like.—February 28.

4477 Frank Trier, 19, Great George Street, Westminster.—Improvements in machinery for working stone and the like.—February 28.

4480 Leo Parker, 33, Chancery Lane, London.—Improvements in or connected with slide valve of steam engines, steam hammer, and the like.—February 28.

SPECIFICATIONS PUBLISHED.

2638, James, gas and oil engines, 1896; 3100, Joy, steam and engines, 1896; 4377, Ackroyd and Best, electrically lighting mines safety lamps, 1895; 6977, Morcom and others, steam engines, 1896; 7038, Wailes, steam generator, 1895; 7481, Makenzie, gas apparatus, 1896; 18509, Ingle, branding machines, 1895.

The above specifications published may be had of Messrs. Rayner and Co., 37, Chancery Lane, London, at 10d. each, including postage.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

Anglo-Swedish Dairy Produce Company (Limited).—Registered February 27 by H. C. Godfray, 60, Finsbury Pavement, E.C. Capital £75,000, in £1 shares. Objects: To adopt and carry into effect an agreement dated February 18, and made between the Globe Trading Company (Limited) of the one part, and H. S. Headington (for the company) of the other part, and to carry on in the United Kingdom, Sweden, or elsewhere, the business of exporters and importers of and dealers in dairy produce of every description, graziers, farmers, dairymen, cattle breeders and dealers, butchers, carriers, shipowners, merchants, commission agents, &c. The number of directors is not to be less than three nor more than seven. The subscribers to the Memorandum of Association are to appoint the first. Qualification for office, 500 shares. Remuneration as fixed by the shareholders assembled in general meeting.

Kathleen Crown (Limited).—Registered February 27 by Snell, Sons, and Greenip, 1 and 2, George Street, Mansion House, E.C. Capital £75,000, in 2s. 6d. shares. Objects: To adopt and carry into effect an agreement referred to in Clause 4 of the company's Articles of Association, dated Feb. 25, and made between W. H. Argall of the one part, and E. J. Hearn (for the company) of the other part, for the acquisition by the company of certain mineral lands at Coromandel, Auckland Province, in the colony of New Zealand, to develop, work, turn to account and deal with the same, and to carry on the business of miners, mine and land owners, mining engineers, smelters, metallurgists, refiners, &c. The first directors—to number not less than two nor more than five—are J. A. Travers, G. Hardie, J.P., and H. Wilson. Qualification of first directors 500 shares; of others, 1000 shares.—Remuneration: The sum of £550 per annum to be divided between them. Registered office, Dashwood House, New Broad Street, E.C.

Morgan's Syndicate (Limited).—Registered on February 28 by Jenkins, Baker, and Co., 2, St. Michael's House, Cornhill, E.C. Capital £75,000, in 75,000 shares of £1 each. Objects: To enter into and carry into effect an agreement to be made between A. E. Morgan of the one part, and the company of the other part: to purchase or otherwise acquire any mining leases, rights, properties, and concessions in Western Australia or elsewhere; to work, develop, turn to account, and deal with the same; and to carry on business as miners, merchants, storekeepers, carriers, builders, engineers, and contractors. The number of directors is not to be less than three nor more than five. The first are to be appointed by the subscribers to the Memorandum of Association. Qualification 250 shares. Remuneration as fixed by the shareholders assembled in general meeting.

Hannan's Mount Ferrum Gold Mines (Limited). — Registered March 2 by Flower, Nussey, and Fellowes, 1, Great Winchester Street, E.C., with a capital of £90,000, divided into 90,000 shares of £1 each. Object: To adopt and carry into effect an agreement (referred to in Clause 3 of the company's Articles of Association) expressed to be made between the City Mining Syndicate (Limited) of the one part, and this company of the other part, for the acquisition of certain mining property situate at Kalgoorlie, West Australia; to develop and turn to account the same in such manner as the company shall see fit; and to carry on the business of a mining, milling, smelting, and metallurgical company in all or any of its branches. The first directors—of whom there shall be not less than three nor more than five—are Sir J. F. Garrick, K.C.M.G., J. Head, T. S. Hall, and W. K. d'Arcy. Qualification, £200. Remuneration, £125 each per annum; Chairman, £25 extra.

Gold Reefs of Western Australia (Limited).—Registered February 29 by J. H. Farmer, 28, Austin Friars, E.C., with a capital of £50,000, divided into 49,000 £1 ordinary shares and 20,000 deferred shares. Object: To acquire by purchase, lease, underlease, or otherwise, any mines, mining, water and other rights, grants, leases, claims, concessions, options, privileges, minerals, lands, buildings, farms, and other property in Western Australia or elsewhere; to work, explore, prospect, develop, and maintain the same, and to carry on in all or any of their respective branches, the businesses of miners and smelters, quarrymen, timber merchants, engineers, shippers, &c. The first directors—of whom there shall be not less than three nor more than seven—are to be elected by the signatories. Qualification, 100 shares. Remuneration £150 each—Chairman, £100—with a percentage of the profits divisible.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGINEERING WORK, STORES, &c.

*** *We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Railway Widening, March 24 (*Salford and Newton Heath*).—For the following works for the Lancashire and Yorkshire Railway Company—viz., widening of railway between Deal Street and Windsor Bridge Junction, Salford, and erection of new buildings, three bridges, &c., in connection with the extension of the carriage works, Newton Heath. Plans and specifications may be seen, and quantities, with forms of tender, obtained on application at the Engineer's office. Tenders, endorsed for the respective works as the case may be, to be in the hands of Mr. C. W. Bayley, secretary, Hunt's Bank, Manchester, by 9 a.m. on 24th inst.

Railway Springs, March 26 (*Lisbon*).—For the supply of 400 railway springs, for the Royal Portuguese Railway Company. Particulars can be obtained from the Paris office of the company, Rue de Chateaudun 28. Tenders to the company's stores at Safita Apolonia, Lisbon.

Railway Stores, April 8 (*Lisbon*).—For the supply to the Royal Portuguese Railway Company of 250,000 kilogrammes of mineral oil, 2000 gauge-glasses, and sundry turntables (three tenders). Particulars can be obtained at the company's Paris office, 28, Rue de Chateaudun. Tenders to the chief engineer at the company's stores, Santa Apolonia, Lisbon.

Sinking Shafts (*Auchbank, Ayrshire*).—For the sinking of two shafts to the depth of 175 fathoms. Particulars on application to Messrs. George Taylor and Co., Auchbank, Ayrshire.

Sinking Well (*Abbots Bromley, Staffs.*).—For sinking a well, about 80 feet deep, at Abbots Bromley. Apply by letter to Mr. J. Garland, St. Oswald's College, Ellesmere.

FLAMELESS EXPLOSIVES.

THE COMMITTEE'S REPORT.

(Issued by the North of England Institute of Mining and Mechanical Engineers.

(*Continued from page* 300.)

Coal Dust.

A SERIES of experiments was conducted with the several explosives, when unstemmed and stemmed, fired into the tube containing a quantity of dust partly in suspension at the time of firing the shot, and another series was made in which explosives under the same conditions were fired into the tube containing a quantity of dust in a state of rest.

An estimate of the amount of coal dust actually in suspension at the time of firing a shot was obtained by aspirating a known volume of air from the chamber through weighed tubes containing tightly-packed glass wool. By connecting these tubes with brass cylinders, which had previously been rendered vacuous, a considerable volume of air could be quickly drawn through the glass wool, and the increase in the weight of the tube represented the weight of coal dust in suspension in a volume of air equal to the capacity of the cylinder.

The following results were obtained in experiments conducted on separate days, No. 1 sample in each case being withdrawn from the tube through the water-gauge hole, and No. 2 sample being taken through a test hole:—

	December 14, 1894. Grains.	January 4, 1895. Grains.
Weight of coal dust per (No. 1) ..	1·38	1·39
„ cubic foot of air (No. 2)..	0·89	0·55

Though these amounts may seem at first sight extremely small, yet it must be remembered that they represent an enormous number of separate particles of excessively fine inflammable dust distributed throughout each cubic foot of air, and, as will be seen from the results of the experiments, even these small amounts exert a very decided influence in determining the ignition of the remainder of the coal dust lying *in situ*. The amount of coal dust found lying on the frame after the completion of each experiment would include a portion of the coal dust which had been in suspension in the tube and fallen back on to the frame, and the weight of this portion cannot be determined.

In the experiments a paper frame about 3 feet in length was affixed to the angle irons in the tube, the centre of the frame being placed immediately under the inlet pipe from the fan; 2 lbs. of coal dust were spread evenly over the frame, the cannon run home, and the fan was caused to revolve for a given time. The cannon was then withdrawn, and the amount of coal dust found remaining on the frame was weighed, and the difference in the weight of the coal dust showed the amount removed from the frame by the action of the fan.

In No. 4 experiment, on the withdrawal of the cannon, the cloud of coal dust was so dense that the light from a lamp suspended in the tube at No. 1 plug hole was scarcely visible, and the daylight at the end of the tube was almost obscured, as seen by looking through the tube towards the open end. Five ignitions of coal dust in suspension with safety explosives are recorded in the tables of experiments; in each case 2 lbs. of coal dust was employed, and the fan was revolved at the rate of about 800 revolutions per minute for a period of about 15 seconds. The results of the experiments made in coal dust are as follows:—With the coal dust *in situ*, no ignitions occurred. With the dust in suspension, there were no ignitions of the dust when the shots were stemmed; but with the unstemmed shots, bellite, securite (two ignitions), ammonite, and carbonite, each caused ignition of the coal dust.

Explosives (Unstemmed) Fired into Coal Dust in Suspension.

The method of introducing the coal dust into the tube and the means of placing it in suspension have already been explained. Trials were made with the seven safety explosives, the relative weights of the shots being adhered to. Four of the explosives caused an ignition of the coal dust—viz., bellite, securite, ammonite, and carbonite. The general results obtained by the experiments, taking the explosives in order as they appear in the tables, are as follows:—

Bellite.—Three experiments were made with bellite, 2 lbs. of Hebburn coal dust being spread upon No. 1 frame in each case. The suspension of the coal dust was attained by running the fan for about 10 seconds. In the first experiment, nothing important was observed. In the second experiment, a flash was observed for a length of 36 feet from the cannon. In the third experiment, the coal dust was ignited, flames were only observed for a length of 45 feet from the cannon, owing to there being no observers beyond that point, the full length of the flames was unknown; the ignition of the coal dust appeared to gather in strength and speed as the flames progressed along the tube; the flames were not of a rolling nature, but more like those arising from the ignition of an explosive gaseous mixture. Considerable force was experienced, Nos. 1, 2, 3, 4, and 5 plugs being dislodged, and the cannon recoiled a length of 2 inches. From No. 2 plug hole, a tongue of red flame was shot out about 3 or 4 feet, the flame continuing to burn until the pressure inside the tube found relief.

Securite.—Two experiments were made with securite, fired into 2 lbs. of Hebburn coal dust placed on No. 1 frame, and the fan was revolved for about 10 seconds in each case. These two experiments resulted in ignition of the coal dust. In the first experiment there were no observers beyond No. 5 sight-hole, but up to that point the tube was seen to be full of flame. In the second experiment, the flames appeared to be extinguished at a point 32 feet distant from the cannon, and were described as being of a yellow colour at that point. No extraordinary force was observed during these ignitions.

Ammonite.—Five experiments were made with ammonite, resulting in an ignition of the coal dust in the last experiment; 2 lbs. of Hebburn coal dust was placed upon No. 1 frame in each case, with the exception of No. 3 experiment, when the coal dust was placed on the bottom of the tube. There was abundant evidence of the presence of flames and sparks in each experiment. The flames resulting from the ignition of the coal dust in the last experiment were not of unusual length, and at a point 36 feet distant from the cannon, a shower of sparks was observed without flame.

Roburite.—The experiments made with roburite numbered 53 in all, and in no instance was the coal dust ignited. The quantity of coal dust, the method of placing the coal dust, and the duration of the running of the fan were varied from time to time during these experiments. Coal dust from Hebburn, Seaham, and Silksworth Collieries was used. There was little or no appearance of flame, but sparks were observed in most of the experiments. In one experiment, included in these results, there was incomplete detonation of the charge.

Carbonite.—One experiment only was made with carbonite, resulting in ignition of the coal dust; 2 lbs. of Hebburn coal dust was placed upon No. 1 frame, and the fan was revolved for about 10 seconds. There was evidence of considerable violence reaching to the end of the tube resulting from this ignition of dust:—Nos. 1, 2, 3, and 4 plugs were forced from their position, and the cannon recoil was considerable. There was no appreciable interval of time between the firing of the shot and the ignition of the coal dust; rolling red flames were observed for a length of 45 feet from the cannon, and sparks were seen, without flame, at 53 feet from the cannon.

Ardeer Powder.—There were 33 experiments made with ardeer powder, and in no instance was the coal dust ignited. Variations in the quantity and in the method of placing the dust, and the period of the running of the fan, were made from time to time. In one experiment a second shot was fired into the tube about one minute after the firing of the first shot, without igniting the coal dust. No flames or sparks were observed during these experiments.

Westfalit.—Fifteen experiments were made with westfalit, and in no case did it ignite the coal dust. A quantity of coal dust varying from 3 lbs. to ¼ lb. was used in the experiments, and the method of placing the dust and the time of running of the fan were also varied. The experiments were made with coal dust from the Hebburn and Silksworth Collieries.

There were six instances of incomplete detonation of the explosive; two cases of incomplete detonation occurred when a No. 6 detonator was used, two cases with a No. 7 detonator, and two cases with a No. 8 detonator. Sparks were generally observed in all of the experiments, and there was evidence of flame in two of the experiments. The charge was placed at the muzzle of the cannon in three of the experiments, without extraordinary results being observed.

Explosives (Stemmed) Fired into Coal Dust in Suspension.

Each shot was stemmed with 3 inches of damp puddled clay. A greater degree of safety is undoubtedly obtained when the explosive is stemmed, and this is proved by the experiments made with air and combustible gases, and with shots stemmed with 3 inches of stemming and fired into coal dust in suspension. In no single instance was the coal dust ignited, nor was ther any appearance of flame. The experiments were made with the several explosives fired into varying quantities of coal dust, while the method of placing the coal dust and the time of running the fan were varied.

Owing to the entire absence of ignitions of coal dust and of flame, it is unnecessary to review in detail the experiments, numbering as follows:—

	Experiments.
Bellite	17
Securite	4
Ammonite	17
Roburite	18
Carbonite	17
Ardeer powder..	20
Westfalit	3

Only four experiments were made with securite, as further supplies of that explosive could not be procured.

Explosives (Unstemmed) Fired into Coal Dust in Situ.

The method adopted of placing the coal dust in the tube has been previously described, and the position and quantity of coal dust used in each experiment. Throughout these experiments there was not a single instance of ignition of the coal dust by unstemmed shots. The results of these experiments may be briefly summarised as follows:—

Bellite.—Three experiments were made with bellite, sparks were observed in two experiments, and nothing seen in the other experiment.—Securite. No experiments were made with this explosive, as no further supplies could be procured.—Ammonite. Three experiments were made with ammonite, a quantity of sparks being observed in each. In one experiment a flash was seen for a length of 45 feet, and in another experiment for a length of 53 feet from the cannon.—Roburite. Three experiments were made with roburite. Sparks were observed without flame in each experiment.—Carbonite. Three experiments were made with carbonite, neither flame nor sparks being seen.—Ardeer powder. Three experiments were made with ardeer powder, without sparks or flame being observed.—Westfalit. Seven experiments were made with westfalit. In two experiments the charge was incompletely detonated, sparks were observed in five experiments, and flame in two experiments. In one experiment nothing was seen, and the charge was found to have been incompletely detonated.

Explosives (Stemmed) Fired into Coal Dust in Situ.

Each shot was stemmed with 3 inches of damp puddled clay. The coal dust was not ignited in any of the experiments. The results may be summarised as follows:—

Bellite.—There were seven experiments with bellite, including two experiments when the charge was incompletely detonated, and neither flame nor sparks were seen.—Securite. Three experiments were made with securite, and as the charge in each case was incompletely detonated, the stock in hand was condemned, and the experiments were discontinued.—Ammonite. There were 12 experiments made with ammonite, including one experiment in which the charge was incompletely detonated; a flash at a distance of 45 feet was recorded in two experiments, and at 13 feet in one experiment, and in the other experiments neither flame nor sparks were observed.

Roburite.—There were 13 experiments with roburite, including three experiments in which the charge had been incompletely detonated; neither flame nor sparks were observed in any of the experiments.

Carbonite.—Five experiments were made with carbonite, without flame or sparks being seen in any of the experiments.

Ardeer Powder.—Five experiments were made with ardeer powder, and neither flame nor sparks were observed.

Westfalit.—No experiments were made with westfalit.

Detonators.

No. 6 detonators were used with all the explosives, with the exception of westfalit, with which Nos. 6, 7, and 8 detonators were employed.

All the detonators used in the experiments were supplied by Messrs. Nobel and Co. (Limited), who state that the detonators contain the following weights of fulminate of mercury:—

No. 6 detonator	1·0 gramme	or	15·4 grains.
No. 7 „	1·5 „		23·1 „
No. 8 „	2·0 „		30·8 „

The experiments were made by firing detonators in and immediately upon coal dust, and in no instance was the coal dust ignited. A further experiment was made, in which four detonators (suspended about 6 inches above the frame carrying the coal dust) were fired simultaneously in the presence of coal dust in suspension, without the coal dust being ignited.

Miss-fires.

The miss-fires which are recorded throughout these proceedings were due to the following causes:—

1.—Short-circuiting of electric firing-cable.
2.—Faulty detonator; or,
3.—Faulty explosive.

1.—Short-Circuiting of Electric Firing-Cable.—The cable may become short-circuited by the wires coming into contact between the tube and the cannon. This occasionally occurs when running the cannon up against the tube, by the cable inadvertently falling out of position and becoming jammed between the sharp edges of the tube and cannon, and so cutting through the insulation of the cable. Short-circuiting most frequently occurred in the experiments with gaseous mixtures, the heat from the frequent ignition of the mixtures melting the rubber covering of the wires, destroying the insulation, and allowing them to become short-circuited. In both of these cases the cannon was withdrawn and the cable readjusted, after 8 or 10 inches of the damaged part had been removed.

2.—Faulty Detonator.—Only two instances occurred in which the detonator was defective.

3.—Faulty Explosive.—There were many instances where the explosive was not ignited by the detonator. In these cases the snap of the detonator was distinctly heard, and its action occasionally disturbed both the stemming and the cartridge. In such cases the bore of the cannon was cleared of both stemming and charge by the detonation of another charge placed in front of the original one.

Conclusions.

The conclusions deduced from these experiments with coal dust are as follows:—

1.—The high explosives (ammonite, ardeer power, bellite, carbonite, roburite, securite, and westfalit) are less liable than blasting powder to ignite mixtures of air and coal dust, with or without the presence of fire damp. These explosives cannot be relied upon as ensuring absolute safety.

2.—The experiments have shown that ignitions of mixtures of air and coal dust, with or without the presence of fire damp, can be obtained when there is present a much smaller quantity of coal dust than has been previously supposed to be necessary

(*To be continued.*)

SOUTH AUSTRALIAN LETTER.

(FROM OUR OWN CORRESPONDENT.)

ADELAIDE, FEBRUARY 5.

I HAD not expected to write again so soon, nor is this letter sent with the idea of "blowing," as was hinted at in my last, but some extraordinary developments are taking place in two or three localities, particulars of which are worth forwarding. A few days ago a splendid parcel of gold, which was obtained for the most part a few months ago from Mr. Patrick Hynes' land at Blumberg, was exhibited in Adelaide. There were eight solid nuggets, ranging in weight from 6 ounces to 12 ounces each, besides about 60 ounces of smaller pieces, the value of the whole being estimated at £500. The ground is still being worked with splendid results, but being within 30 miles of Adelaide, it does not attract 1-10th part of the attention it would if the site of the discovery were anywhere in West Australia. A few sensible working miners, however, are steadily getting out the gold, and making their pile in a much easier way and under far more pleasant conditions than they obtain in the West. Here is an extract from the *South Australian Register* of February 3:—

> Our Blumberg correspondent writes on February 1:—"On Wednesday last Messrs. W. F. Giffen (a brother of the great cricketer) and Trestrail showed me a small bottle containing about 2½ ounces of rough gold, which they had washed from about half a dishful of stoff, taken from a leader which they struck that afternoon. To-day I hear they have put through about 5 or 6 cwts. of stuff, with the result of 8 to 9 ounces of gold. Messrs. Pflaum and Co. are still buying a lot of gold from the various alluvial diggers. On Wednesday one digger brought in 2½ ounces, found in a short time. Several Western Australian diggers are working here, and they have every hope that some good paying mines will be found."

Here is another extract from the *Advertiser* of January 22, relating to another mine in the same district:—

THE GREAT TALUNGA MINE.

> Mr. J. C. J. A. Field, of London, who was a passenger by the *Orotava*, and who has come out as manager for the Great Talunga Mine, was met by a representative of the *Advertiser* on Tuesday evening, and, in a short interview, said:—"We think in the old country that the mine at Talunga is worth looking after, and the shareholders deemed it advisable to send me out, along with Mr. Frank H. Michell, of Redruth, Cornwall, an experienced miner, as assistant manager. My experience in mining has been largely gained in Africa and South America, where I have been for the last 13 years, and in that time I have shown for my employers the very best results. I think it is a mistake for people to go to any country and expect to pick up gold on any mine. I believe in the stone and samples shown for the Talunga Mine, and with good hard work and attention the Mount Pleasant Mine will pan out gold equivalent to any in West Australia. It is ridiculous to imagine the mines in West Australia are the best in Australia; the stones I have seen prove conclusively that South Australia has a great future before her. I shall do my best to prove this assertion, and sincerely trust that shortly the Talunga Mine will be the first and foremost in South Australia. I leave for the hills on Thursday.

The following is from the *South Australian Register* of January 31, and refers to the old Echunga district:—

January 29.

> Yesterday I visited the recent sensational discovery of Messrs. Swansborough and Dainty. The find is situated on Mr. Wintworth's miscellaneous lease 416, contiguous to German Gully and abutting the Hahndorf-road and 2 miles from the old Echunga fields. This rich shoot of gold was accidentally discovered while surfacing. Some splendid specimens were quickly procured, and an assay of some of the stone went as high as 70 ounces to the ton, and an equally high percentage of silver.

Work is also going on satisfactorily at the old Barossa diggings.

A friend has just called to inform me of what he saw at Blumberg two days ago. Nuggets of gold up to 1 lb. weight, and hundreds of pounds worth were lately purchased from the diggers—a grand sight.

On Monday I received a letter from Wadnaminga mentioning a splendid improvement in the oldest mine on the field, and which has been twice abandoned, but is now being steadily worked by practical miners. A fine shoot of gold proved for 120 feet, and yielding magnificent specimens. Quite a revival impending in the district, and away eastward for 10 miles to Taltabooka. The ordinary reef stone at the above (Wadnaminga) mine is estimated as worth 2 ounces of gold to the ton.

Nillinghoo also is making a fresh start, and old Echunga seems likely ere long to become once more a great gold-producing district.

PLATING ALUMINIUM.—M. Charles Margot, professor of physics at Geneva, has succeeded in electro plating aluminium with copper. His method consists in first cleaning the aluminium with an alkaline carbonate, after which it is thoroughly washed in water. This is followed by an immersion in a 5 per cent. solution of hydrochloric acid and another washing in pure water. A preliminary deposit of copper is then obtained by immersing the article in a weak and slightly acid solution of sulphate of copper. This done, the article is thoroughly washed and placed in the electrolytic bath.

THE EXTENSION OF THE MAIN REEF WESTWARD OF THE FARM WITPOORTJE.

An important paper on the above subject was read before the ordinary monthly meeting of the Geological Society of South Africa, by Mr. DRAPER, F.G.S., secretary of the society.

Introduction.

I PURPOSE to place before you a collection of facts gleaned during an extended period of examination and investigation, covering the tract of country from Johannesburg to Klerksdorp, a distance of over 100 miles. Professional work, in addition to special interest in geological investigation, has led me in the direction above mentioned; and I wish to record my thanks to those gentlemen in whose interests I have visited the various farms for their kindness in allowing me a free hand to make use of any and all information I have succeeded in gathering while employed in studying the geology of their properties. I also wish to state that I am in the pay of no particular house, am connected with no group of capitalists, have no interests in any claims or gold mines in the Transvaal, and do not hold a single share or interest in any gold mine in South Africa, directly or indirectly, and, therefore, claim that I am free from all prejudice or financial leaning in the matter I intend dealing with, and, consequently, can speak openly and unreservedly. I have no "axe to grind" and no personal interests to study.

The extension of the main reef series, either to the east or to the west, is a matter of great importance to this community. Up to the present no one has been able to say with certainty where it is situated beyond the Witpoortje fault on the west or the farm Driefontein on the east. Many theories have from time to time been advanced, but these have all failed when put to practical test. I do not intend to deal with the extension of the main reef to the east, leaving that for some future date, so will confine my remarks to the probable line along which it should be sought for to the west. The main reef, if not the lowest bed of conglomerate which has been discovered in the Table Mountain sandstone series, in this part of the country, is, at any rate, very low down in the system, and it is the best known, most regular, and most valuable conglomerate bed which has yet opened up. It extends in a comparatively unbroken line from Knights Company (Driefontein) on the east of Johannesburg to Durban-Roodepoort on the west, a distance of about 18 or 20 miles, and yields gold in payable quantities through almost this entire length. It has also been proved to continue downwards for a distance of over 3000 feet on the dip. Westward of the Durban-Roodepoort, however, the continuation of this most valuable gold-producing bed has not been traced with any degree of accuracy. Though gold-bearing conglomerates are known to exist on the farms to the westward, and various theories have from time to time been advanced to prove that these are the western extension of the main reef, none of them are satisfactory, and, as they have in most instances been brought forward by ignorant or interested persons, they are generally utterly at variance with every known geological law. In order to assist the meeting in comprehending my views, I have constructed a general plan of the country with which I am dealing, and from this it will be seen that the main reef series, which maintain a course approximately east and west for a long distance, and curves gradually to the southward on the farm Roodepoort, terminates on the Durban-Roodepoort property. Beyond this point no continuation of the main reef has yet been identified with certainty. To the north-west, on the farm Witpoortje, a line of reef has been opened up (known as the Botha's reef), and although this differs in many respects from the main reef, it is generally considered to be the western extension of that valuable group. I purpose to prove that this theory is at fault, and that the main reef lies in a different part of the country altogether, and, in order to make my subject as clear as possible, I will now give a brief review of the general geology of this portion of the Transvaal. The accepted succession of the strata in this part of the country is as follows:—

1. Magaliesberg and Gatsrand series of flagstones, quartzites and shales = Zwartberg and Zuurberg quartzite group of the Cape Colony.
2. Black reef series.
   Dolomitic limestone series.
   Unconformability.
3. Sandstone quartzite and shale group with conglomerate beds = Table Mountain sandstone series.
4. Older sandstone quartzite and shales = Malmesbury or Lydenburg beds of Dunn.
   Unconformability.

Schists = Dunn's Namaqualand schists.
Granite rocks.

In my former paper, read before this society on May 13, 1895, and included in the transactions, I gave a general description of these various series, and must refer my hearers to that paper for fuller details. With reference to the sequence of the strata, as given above, I have great pleasure in stating that my most strenuous opponent with regard to the position of the dolomite, Mr. John Ballot, our worthy vice-president, has written me as follows from London:—"Your able reply to my criticisms has beyond all doubt determined the position of the dolomite and settled a point of great theoretical and much greater practical interest." The map shows the position and extent of the various series, and, excluding the granite rocks and schists, the sedimentary deposits commencing with the lowest may be briefly described as follows:—

No. 4. The series of older sandstones, quartzites, and shales without conglomerates is 8000 feet thick. No trace of a conglomerate bed has yet been found in this area as far as I am aware, but interstratified in it lies the peculiar bed of slate containing titaniferous iron and layers of jasper known as the

Hospital Hill Slate,

which, owing to its well-defined characteristics, is readily identified and is generally considered by mining men and prospectors as the only reliable guide to the position of the main reef. As is well known to all who study the strata in this part of the country, this layer of slate outcrops for a long distance, about 6000 feet north of the main reef series, and continues parallel with it to the point where the latter terminates on the farm Roodepoort. Though there is no very marked difference in general characteristics of the bulk of the rocks forming the older series of quartzites, sandstones, and shales (No. 4) and the newer series (No. 3), the latter contains numerous interbedded layers of conglomerate, extending throughout its entire length, and some of these conglomerate beds contain gold in payable quantities, the best known being that named the

Main Reef Series,

which is the most continuous, and yields the best return of gold. It is, therefore, most sought after by speculators, and if its continuation westward of that point where it terminates on the farm Roodepoort can be definitely located, a new field for the gold prospector will be opened up, and no doubt a considerable area of valuable ground will be added to that already known to exist. To the southward, and running parallel with the main reef, is the

Bird Reef Series,

known by the dark colour of the rock in which it is interbedded.

The yellow Free State and Kimberley series, recognisable by the smallness of the pebbles in the conglomerate beds, are next in upward succession. These are followed by the Elsburg series, which consist of a great number of reefs, many of considerable thickness, and generally composed of large pebbles. These different series are separated from each other by sandstones and shale beds of varying width in measurement along the surface as follows:—

From the main reef to the Bird reef about 2500 feet.
From the Bird reef to the Kimberley group about 4500 feet.
From the Kimberley to the lowest of the Elsburg reef about 800 feet.

Thickness of the Elsburg series about 2000 feet.

Total from the main reef to the top of the Elsburg series about 10,000 feet.

The general angle of dip is from 35° to 22°.

Overlying the Elsburg series is the sheet of diabase, which forms a range of hills known as the Klipriversberg, and this is followed by the Black reef, overlaid by dolomite (No. 2); and finally the group of sandstone, quartzites, and shales known as the Gats Rand series (No. 1) completes the succession of the strata in this part of the country. All these beds are tilted to the southward at varying angles.

Having given a brief review of the general geology of a section of the country in the vicinity of Johannesburg, I intend now to compare the strata in the area lying westward of the farm Witpoortje with that which I have just reviewed, and, to render the description as clear as possible, I have subdivided my subject into the following:—

(A) The Johannesburg area, extending from the town of Johannesburg to the eastern boundary of the farm Witpoortje.

(B) The Krugersdorp-Randfondtein area, lying westward of Witpoortje, extending northward to and including the farms Honigklip, Groot Paarde Kraal, Luipaard's Vlei North, Waterval, Randfontein, Uitvalfontein, and the eastern portion of Middelvlei.

(C) The Witfontein area, composed of the farms Droogeheuvel, Hartebeesfontein, Witfontein, Doornfontein, Elandsfontein, the northern portion of Blaauwbank, and Rietfontein, and the western portion of Middelvlei.

Sections 1, 2 and 3 show the sequence of the strata in each of the areas above mentioned, and it will be seen that there is a marked resemblance between them. In each of these sections there is an equal thickness of strata from the underlying schists to the Hospital Hill slate, upon which a succession of layers of quartzite and shale occur until the position of the main reef group is reached. In area A this group of reefs is well developed, and consists of the north and south reefs, with smaller beds, known locally as "leaders." In area B an ill-defined line of reefs is found in the same position, and the old familiar "Red Bar," which was the early prospectors' guide to the exact position of the main reef, crops up distinctly. In area C there is no surface sign denoting the existence of the main reef, and as absolutely no prospecting has been done, nothing definite is known about it. The general appearance of the strata, however, together with the continuance of the main reef at Johannesburg, a certain distance south of the Hospital Hill slate and running parallel with it, point in the direction of the main reef being found in the same position marked d1 and d2 in areas B and C, which it occupies in area A. A thickness of sandstone with interstratified beds of shale continues for a certain distance, until the position occupied by the Bird reef group is reached. In area A this group of reefs is very distinct, and can be distinguished by the dark colour of the rocks and the small and even size of the pebbles from which the reefs are constructed. In area B this group of reefs is poorly defined, though there are distinct evidences of its occurrence. In area C the same dark coloured rocks, with small round pebbles, occur in a similar position to that which the Bird reef occupies in area A. A series of quartzites, sandstones, and small shale beds lies between the Bird reef group and the next in succession, known as the Yellow Free State and Kimberley reef series. This group (H) is again specially distinct in area A. In area B it is represented by what is known commonly as the Government reef, and in area C it is as distinct as it is in A, and bears the same characteristics. In fact, there is no difference between a specimen taken from the Kimberley series in area A, and a specimen taken from the reefs lying in the same relative position on Hartebeestfontein, Witfontein, or Elandsfontein in area C, and the same layer of coarse gritty sandstone which overlies the Kimberley series in area A is found equally distinct along the line of reefs above mentioned (C).

At this point a difference will be noticed, a thick bed of red shale in addition to the layers of sandstone and quartzite overlying the last mentioned group of reefs in areas B and C This feature is entirely absent in area A, or if this bed of shale occurs in the last-mentioned area, it is insignificant in comparison, and has not been opened up. In area B this red shale is a prominent feature in the geology of the country immediately north of Krugersdorp. In area C it runs parallel to the southern boundary of the farm Hartebeestfontein.

The next group in upward succession in area A is known as the Elsburg series, which consists of a great number of reefs, some many feet in thickness and composed of large pebbles. This group is particularly well developed south of Johannesburg, extending from the farm Leeuwpoort, running north of the village of Elsburg (from whence it takes its name), and continuing an interrupted course through the farms Elandsfontein, Klipriversberg, Turffontein, Diepkloof, Vierfontein, Klipspruit, Vogelstruisfontein, finally terminates on Vlakfontein. In area B a group of conglomerate beds known as the Botha's reef series, and consisting of a great number of reefs, many of them composed of large pebbles agreeing in character and size with those continued in the Elsburg series, and lying in the similar relative position to that which the Elsburg occupies with respect to the underlying reefs, in the area A, occurs. The group of reefs known as the Botha's reef series (in which I include the Violet, the Battery, the Lindum, and all the other reefs lying between the Emma reef and the small patch of amygdaloidal diabase which outcrops on the northern boundary of the farm Rietvlei) commences on the western portion of the farm Witpoortje, passing through Luipaard's Vlei North, Uitvalfontein, and Randfontein, where its direction is north and south, and curves abruptly eastward on Middlevlei. Its course through these farms may be likened in shape to the letter S. In area C this group of reefs is not particularly well developed, and it is covered over in parts—especially on the farms Rietvlei, Blaauwbank, and Elandsfontein—by a later bed of quartzite, which lies unconformably upon the tilted edges of this series. In this quartzite I recognised the overlying beds of the Black reef series. I will return to this matter later on, and in the meanwhile I wish to call your attention particularly to the great sheet of amygdaloidal diabase which is such a conspicuous feature in area A.

This sheet of diabase is, to my mind, a great factor in defining the geology of this country. It represents the termination of the series of conglomerates and quartzites which ended with the upper layer of the Elsburg series. At present it occurs as a well-defined range of hills known as the Klip Riversberg range, situated about 4 miles south of the town of Johannesburg. All geologists who have studied this country agree that this mass of igneous rock was spread over the beds of conglomerate while they were still in their original position, and consequently, when the underlying beds were tilted, it assumed a similar inclined position in sympathy with them. We, therefore, find that this amygdaloidal diabase never intrudes upon, intersects, or interferes with, the course of the underlying conglomerate beds. If this igneous mass had risen through a fissure, it would have done so, in all probability. We can scarcely imagine a crack or fissure in the crust of the earth occurring along the lines of stratification, or parallel to any particular layer of sedimentary beds for a great distance. In area B the sheet of amygdaloidal diabase has thinned out considerably, but it is distinctly recognisable on the northern boundary of the farm Rietvlei; it does not occur at all in area C. The Black reef lies directly upon the amygdaloidal diabase to the south of Johannesburg, in area A. Its angle of inclination is, however, much flatter than that of the main body of the conglomerate series, ranging from the horizontal to about 15°, with occasional reverse dips. In area B a similar line of reef, known as the Vulcan, occurs, and in numerous places on the farms Randfontein and Middlevlei patches of Black reef are found lying unconformably upon the older series of conglomerates beneath it. On Middlevlei the Black reef is well developed, and rich in gold. On the Howick and Rockley property, on Middlevlei, it lies in undulations upon the lower series. In area C there is no trace of the amygdaloidal diabase, but, on the contrary, quartzite similar to that accompanying the Black reef occurs on the farms Rietfontein, Blaauwbank, and Elandsfontein. There is indisputable evidence in these sections that the main body of the conglomerates, terminating with the Elsburg series in A, Botha's reef in B, and the upper reefs in area C, have received a large proportion of their present inclination before the Black reef was deposited upon them; and, if the great thickness of the amygdaloidal diabase in area A had not intervened, the Black reef now found along the banks of the Klip River would have covered the Elsburg series in area A, as it does in B and C.

The next great feature in the geology of this part of the country is the dolomite, which lies upon the Black reef, dipped at about the same degree in a similar direction. So far as my researches extend in this country, I have not found the Black reef occurring without dolomite overlying it. This appears to me to be a hard and fast rule, and, as the dips of the dolomite and the underlying quartzites of the Black reef are similar, I have grouped these two into one system, though they differ greatly in general appearance and in chemical composition

Finally, there are two areas in the map marked respectively D and E. The former of these covers the farms Rietvlei and Luipaard's Vlei South principally. I have not drawn any reefs in this area, though I know that they exist there, but in such a disconnected condition that it is impossible to describe this part otherwise than as "an area of great disturbance," in which the strata have been displaced and thrown out of their original position by earth movements. The line of fault which has caused the displacement of the reefs in areas A and B passes through the farms above mentioned, no doubt, but its exact position can only be determined by an actual geological survey. The area marked E is covered with surface deposits, principally gravel beds and blown sand, and it is consequently impossible to locate the exact position of the reefs in that part.

Conclusions.

In the foregoing somewhat disconnected description and comparison of the special geological features observable in the three areas above mentioned, I have endeavoured to place before this meeting the chief reasons which have caused me to assume that the main reef will be found in the positions indicated on areas B and C; and I now wish to add a few general remarks concerning the great geological programme which I have endeavoured to solve. The most prominent feature in the geology of the Witwatersrand in general is that remarkable and distinct sedimentary deposit known as

The Hospital Hill Slate.

The specimens exhibited on the table are taken from four different spots — from the Hospital Hill, immediately north of the town of Johannesburg; from the outcrop on the farm Honig Klip, in area B; from the north boundary of Witfontein; and from the north-western corner of Elandsfontein, in area C. These specimens are so alike that I am sure there is no one who can detect any difference between them. Now, as there is no other bed of similar slate in this country, and as this one in particular occurs all along, and at an equal distance from the base of the older series of quartzite sandstones and shales (displaced only at the line of fault which traverses the farm Witpoortje), I can see no reason why it should not be accepted as a guide to the position of the main reef on areas B and C, as it is on area A. The next is a distinct line of conglomerates recognisable by their special peculiarity known as the Bird reef series. This is particularly distinct on area C at about the same distance from the Hospital Hill slate as it is in area A. If then the Hospital Hill shale and the Bird reef series are recognisable, and maintain a similar position, where should we find the main reef series? Naturally occupying the same position on areas B and C, as it does on area A, or, in other words, about 6000 feet from the Hospital Hill slate, and about 2500 feet from the Bird reef series, all along the line of their outcrops. This position is indicated in the plan approximately as follows:—

Passing through the northern portion of the farm Groot Paardekraal the main reef should traverse the ground owned by the Alexandra Estate Gold Mining Company, and, terminating on the farm Sterkfontein and Waterfall (where it is lost under newer formations), should pass through the north-western portion of the Hartebeestfontein, passing through nearly the middle of Witfontein, the south-east corner of Doornfontein, and the north-western portion of Elandsfontein. Along this line the main reef should be searched for about 6000 feet from the Hospital Hill slate. I have recently passed over this ground, and was surprised to find that along the whole of the line I have mentioned above, there was not the slightest sign of prospecting work having been done at any time. Prospectors appear to have confined their attention to the more southern lines of reef, which, judging from their special features, I take to be the Kimberley series.

I expect to be taken to task by those who own claims on what is known as the Botha's reef series. I wish, therefore, at this point to emphasise the fact that it does not signify one atom what name a reef is known by, so long as it contains gold in payable quantities. Whether the reefs on Luipaard's Vlei, Randfontein, Uitvalfontein, and other farms along that line are called the Botha's, the main reef, or by any other name, is of no consequence whatever, so long as the gold is in them, and they can be worked at a profit.

To the geologist, however, it is a matter of great interest, and I can personally see no other way of fitting in the different lines of reef on the three areas I have described, and explaining the peculiar position of the strata in general, so well defined in area A, is continued in area B along what is known as the Botha and Randfontein series, and that the Government reef on Groot Paardekraal is the extension of the Kimberley reef series, which is again remarkably distinct in area C.

I expect the question will be raised—"If the reefs on Luipaard's Vlei and Randfontein are the continuation of the Elsburg series, why do they contain gold in payable quantities on the farms Luipaard's Vlei and Randfontein, and, on the contrary, along what is known as the Elsburg line, they are generally considered unpayable?" My reply to this question is—First: The occurrence of gold in any reef is purely accidental, and the result of a series of chemical and mechanical actions which probably occurred within limited areas, and consequently there is no reason why a reef should be equally rich everywhere.—Second: The poor results obtained from the Elsburg series some years back, when the machinery and appliances were crude and the knowledge of the amalgamator rudimentary caused the abandonment of this line of reefs, and they are consequently lying unworked up to the present time, though rich patches are known to exist in several places in them. Those acquainted with the early history of these fields can remember the time when the reefs on Randfontein and the farms in its vicinity were looked upon as worthless. Perseverance, however, of the proprietors, and the introduction of modern machinery and processes, have proved that these reefs can be made to yield a remunerative return, and I do not doubt in the least that if the same amount of good work were put into the Elsburg line of reefs, they would be found to contain gold in payable quantities. The value of the reefs lying in a similar position to the Elsburg series in other parts of the country must not be lost sight of.

In the second part of this paper which I will read at a later date, I hope to prove that the gold estates at Klerksdorp, which certainly contain gold in payable quantities, and the Buffelsdoorn reef, which has yielded a large quantity of gold, are both situated on the Elsburg line.

Mr. Draper's most important paper concluded, Dr. EXTON, in formally thanking the secretary in the name of the society for his valuable contribution, said they all knew the thoroughness with which Mr. Draper did his work, and the enthusiasm he displayed in pursuit of his favourite science. So many important points were raised by the paper that he thought discussion on it should be reserved till next meeting, by which time members would have time to study it thoroughly and weigh their arguments. The subject was a most important one. Personally he was greatly interested in it. There was a great scope for research in the west and south-west, and such research would not benefit the science of geology merely, but the Rand mining industry as well.

Mr. SCOTT ALEXANDER, Mr. CARRICK, Mr. BARENDS, Mr. WILSON MOORE, and Mr. RAIT then made a few brief remarks on the paper, these in the main agreeing with the deductions made by Mr. Draper; but, as the President suggested serious discussion of the paper was reserved till next meeting.

STATISTICS RELATING TO COPPER.

FROM THE CIRCULAR OF

MESSRS. ARON HIRSCH AND SON.

[SPECIALLY TRANSLATED FOR *The Mining Journal*.]

(*Continued from page* 306.)

HALBERSTADT, FEBRUARY, 1896.

IN consequence of the efforts made, on the basis of our enquiries, by the Imperial Statistical Office, the Custom House authorities at the frontiers have now been instructed to require carriers to furnish more reliable particulars as to the countries of origin. The figures obtained in this manner for 1894 as to the imports from England, Holland, and North America show that the corrections we made in the statements contained in the Imperial Statistics in relation to imports from those three countries for 1893 were not only justified, but represented even the minimum scale of the corrections necessary, inasmuch as the Imperial Statistics contain for 1894 and 1895 some still more considerable mutations in the imports from these three countries as compared with the preceding years than those we have indicated in our statistics for 1893. Thus the further mutations for 1894 and 1895, which, as a matter of fact, have taken place in the same direction, may be gleaned from the following table: —

	England. Tons.	Holland, Tons.	North America. Tons.
Our corrections for 1893 ...	12,102	1053	18,086
Those of the Imperial Statistics for 1894	7,430	109	23,795
Those of the Imperial Statistics for 1895	7,363	139	31,311

Deviating from the preceding figures furnished by the Imperial Statistics, the Statistical Office of the British Board of Trade gives for 1892–1895 the following data in relation to the exports of copper from England:—

	1892. Tons.	1893. Tons.	1894. Tons.	1895. Tons.
To Germany.....	6,765	6,540	4,875	6,629
To Holland (Germany)	12,902	9,010	4,283	6,942
To Other Countries.....	22,624	12,794	10,299	16,061
Total	42,291	28,344	19,457	29,632

It is to be borne in mind, here, that the quantities set down as exports to Holland have, probably for the greater portion, been forwarded to Germany, excluding only those destined for consumption in and transit through Holland.

Already for 1894, the imports set down in the Imperial Statistics as:—

7430 tons from England } =7539 tons.
and 109 „ „ Holland }

differ from the English statement, thus:—

4875 tons to Germany } =3158 tons.
4283 „ Holland }

by 1619 tons, and for 1895 this deviation is still more striking. According to the Imperial Statistics, there were imported:—

From England 7363 tons } =7502 tons.
„ Holland 139 tons }

whereas the English statistics state the exports to be:—

To Germany 6629 tons } =13,571 tons.
„ Holland 6942 tons }

showing an increase of 6069 tons.

This difference can, probably, not be explained entirely, and it would almost appear to us that, in the Imperial Statistics for 1895, the imports from North America, amounting to 31,311 tons, were set down at a somewhat excessive figure, and that from Holland and England, amounting to only 7502 tons, at too low a computation. With a view to explaining this difference partially, we would point out that we have frequently had cases, in our experience, in which exports from North America to Holland and the German Baltic Ports were consigned under through bills of lading for transhipment in England. In the German Imperial Statistics those consignments are correctly set down as North American imports, whereas, in the English statistics, they are registered as imports from North America, and exports to Holland and Germany.

In the same manner there exists a difference which consists in the fact that, according to the German Imperial Statistics, the imports from North America amount to 31,311 tons, whereas the North American statistics set them down as follows:—

Export to Holland } 20,638 tons raw copper.
„ Germany ... } 99 „ copper metal.
6,744 „ raw copper.

27,481 tons

Assuming the whole of the 27,481 tons to have been exported to Germany, there remains also a difference of 3830 tons, as against the 31,311 tons set down as having been imported into Germany. We incline to considering the English statement of the export to Holland and Germany, amounting in the aggregate to 1351 tons, as being approximately correct. The compilers of the German Imperial Statistics are necessarily obliged to rely, in respect of articles such as copper, the far greater portions of which go to the large Rhenish-Westphalian and South German industrial centres *via* Holland, on the statements (declarations) of the carriers for ascertaining the real countries of origin, whereas in England the vessel carrying the goods produces regular documentary evidence as to the port from which she sailed, enables the respective authorities to obtain reliable particulars. More especially in the case of copper, which is imported only in minimum quantities across the so-called "dry frontiers"—from the south and east—but in very large masses through Holland, seawards, it is difficult to ascertain the country of origin, all the more so as in Holland statistics are greatly neglected and afford no security. With regard to the total amount of the import of 44,368 tons, the Imperial Statistics are absolutely correct.

Following up, with regard to the countries of origin of imports into Germany, in concert with the foregoing statements, the English and North American statistics, we may consider it to have been positively proved that the German consumption, which is still continually increasing, is no longer so exclusively supplied by North America as was the case in 1893, and, notably, in 1894. Although Germany imports every year large quantities of copper from North America (1893, 18,986 tons; 1894, 23,795 tons; 1895, 31,311 or 27,481 tons), the German consumption had, nevertheless, to be supplied to a larger extent than had been the case in the preceding year by England, although the figure representing that supply, as set down in the statistics of the Board of Trade for 1892, has not again been entirely attained. We shall refer again to this groupment of figures on the occasion of dealing with the particulars obtained in relation to the European consumption; but, in the first place, we will deal with the German consumption; to wit:—

In accordance with the figures published by the Statistical Office, the German production of copper amounted:—

In 1891 to 24,688 tons
„ 1892 „ 25,406 „
„ 1893 „ 24,011 „
„ 1894 „ 25,857 „

The consumption in 1895 is not yet known.

The largest home production of copper is represented by the Mansfeld Mining Works. The Mansfeld production of copper was:—In 1891, 15,365 tons; in 1892, 15,588 tons; in 1893, 14,358 tons; in 1894, 15,217 tons; in 1895, 15,083 tons. Our last year's valuation for 1894 of 26,000 tons scarcely differs from the official computation, as it is now known, of 25,857 tons.

This production of 25,857 tons is composed of 25,722 tons raw copper, and 676 tons ores. As the latter are set down in the Imperial Statistics at a value of 160 per ton, we estimate it to render a yield of 20 per cent. copper, or at 135 tons pure copper, which gives, accordingly, a total production of 25,722 tons + 135 tons = 25,857 tons.

In the meantime, we estimate the German copper production for 1895, once more, at 26,000 tons, as neither the Mansfeld production (15,083 tons, as against 15,217 tons) nor that of the copper smelting works of lesser importance have experienced any alteration worth mentioning as compared with the preceding year.

Now, with a view to avoiding the error of a double computation, we must again take into consideration, as we did on the occasion of our former enquiries as to consumption, that a portion of the home production is worked up from imported foreign ores and iron pyrites, and that only a portion of these imports is consumed direct in copper rolling mills or copper vitriol works, without being included in the figures representing the production.

This time we deduct 4500 tons, as against 5000 tons last year, for the production of copper from imports, because the supply of Hispano-Portuguese (cupreous) iron pyrites decreased in 1895 to 278,713 tons, as against 292,371 tons in 1894, and, consequently, only 6968 tons, as against 7420 tons for 1894, of copper yield may be set down in this item for imports. Consequently, the German copper consumption is as follows:—

	1891. Tons.	1892. Tons.	1893. Tons.	1894. Tons.	—	1895. Tons.
Import	46,155	44,514	51,806	52,504	—	59,742
Less Export	9,973	9,817	11,304	10,406	—	10,893
Excess Import.....	36,180	34,697	40,502	42,098	—	48,849
Production	24,688	25,406	24,011	25,857	(taxed)	26,000
	60,868	60,103	64,513	67,955	—	74,849
Less: For Imports of Copper Ore and Iron Pyrites as already explained ...	4,000	4,000	4,000	5,000	—	4,500
Home Consumption	56,868	56,103	60,513	62,955	—	70,349

Just as the home consumption shows, in accordance with the foregoing figures, again an increase for 1895, so also the Total Export of Manufactures, the statistics of whose Import and Export we subjoin, has experienced an increase during last year.

B.—Copper Manufactures.

No. of Imperial Statistics (in continued connection with copper).*	Description.	Imports. 1891. Tons.	1892. Tons.	1893. Tons.	1894. Tons.	1895. Tons.
509	Copper in bars and plates	659	694	448	495	425
510	Copper wire	191	218	150	131	171
511	Cables	401	43	47	41	100
512/4	Sundry copper wares....	188	16	10	7	8
512	Coarse (rough) coppersmiths' wares ...	948	558	527	452	434
516	Cartridges, fulminating caps, &c.	531	71	86	87	129
517	Fine copper wares ...	613	555	560	565	625
	Total ...	3,531	2,155	1,828	1,778	1,892
		Exports.				
509	Copper in bars and plates	4,151	4,507	4,889	5,009	4,700
510	Copper wire	2,166	2,565	3,052	4,433	3,975
511	Cables	2,030	1,526	1,957	2,193	3,713
512/4	Sundry copper wares. ..	558	492	563	501	556
515	Coarse (rough) coppersmiths' wares ...	2,311	1,902	2,050	2,538	2,643
516	Cartridges, caps, &c. ...	2,221	2,374	3,682	3,376	4,450
517	Fine copper wares ...	3,106	3,234	3,859	4,117	4,912
	Total ...	16,543	16,600	20,052	22,167	24,949

* We connect our Statistical Report with that of the Imperial Statistical Office, although we are quite aware that a portion of the manufacturers set down at No. 511/17 contain also other component parts besides copper. But we thought it right to adopt this *modus operandi*, partly with a view to effecting a closer connection with the Imperial Statistics, and partly on account of the necessity for compensation, because the export of copper, consisting of many other goods, such as apparatus, machines, engines, ships' material, &c., which all contain considerable quantities of copper, is very important, but cannot be controlled, and, therefore, also not included in the compensation.

C.—General Remarks on the Consumption.

Our annual statistical compilation, whose object consists in the task of unfolding, for the period in point, a picture representing the development of the conditions of production and consumption in Germany, may once more look back with satisfaction on the year 1895.

Consumption is steadily increasing, so much so that since 1892 not a single year has passed in which a decrease could have been registered. All other countries possessing a highly developed copper industry, such as North America, England, and France, had during the years which have elapsed since 1892—notwithstanding the progressively increasing demand—to register, here and there, years whose statistics show some decrease in consumption, however small it may be.

This is, in our opinion, to be ascribed to two different causes. In the first place, the German consumption is, in itself, increasing from year to year, and in the second, copper is not here, like in other countries, garnered for speculative purposes—which circumstance would throw a shadow on the statistical picture—but the shipment of that stable takes place altogether on a large scale, direct from the countries of production to those of consumption. The speculative hoardings of other countries, which must yet be partly looked upon as the sequel of the exploded French copper syndicate, prevented the former statistics of these countries from giving correct expression to the actual conditions governing the consumption. These hoardings, which, as already stated, derive their origin in a great measure from the syndicate years of 1887-88, exercised an influence which was yet felt during the last few years in many directions. As late as in 1895, a remnant parcel of copper metal which had been hoarded up in this manner has been transferred from North America to Europe. Now, as all parcels of such a nature are said to have been disposed of, it is likely that, in future, statistics will everywhere afford the possibility of drawing an absolute instead of a relative picture of the conditions obtaining in the corresponding countries.

As shown in the following figures, the

Consumption in Germany

has steadily increased; thus:—

	Tons.		Tons.		Per cent.
1893 ...	60,513	as against	1892 ... 56,103 ...	Increase	7·8
1894 ...	62,955	„	1893 ... 60,513 ...	„	4·1
1895 ...	70,349	„	1894 ... 62,955 ...	„	12·3
Total					24·2

On the other hand, the increase in the world's production cannot even show since 1892 (total, 310,472 tons) an improvement of 10 per cent.; consequently, the consumption in Germany has progressed more rapidly than that of the rest of the world.

We may, therefore, with national self-consciousness, look upon the development of our home metallic industry with national self-consciousness, and foreign countries even will have to acknowledge the fact of Germany being called upon to take up a leading position among the countries possessing a highly-developed metal industry.

We subjoin a few figures, which will show the development that has taken place in the conditions in point:—

Year.	Imports.* Tons.	Exports.* Tons.	Production Tons.	Consumption.* Tons.	Export of Manufactures. Tons.
1880	12,310	6478	13,839	19,622	—
1885	13,168	5706	17,737	25,199	—
1889	29,643	7146	22,134	44,631	—
1891	34,153	6244	24,688	56,868	16,543
1892	32,498	6597	25,406	56,103	16,600
1893	38,455	7517	24,011	60,513	20,052
1894	37,032	6608	25,857	62,955	22,167
1895	44,365	6329	26,000 (taxed)	70,349	24,949

* The items Imports and Exports relate only to raw copper (black and shruff copper) as stated at No. 503 of the Imperial Statistics. In the figure representing consumption, the imports of ores and iron pyrites were taken into consideration in our statistical computation for the years 1891 to 1895.

Foreign Countries.

As in our previous statistical reports, we subjoin a few items relating to the statistics of North America, England, France, Austro-Hungary, and Russia. The comparison of the statements made in respect of these countries will afford *a uniform* view of the position of matters.

The total production of the world has been estimated by Messrs. Henry R. Merton and Co., of London, in (English) tons, for

1891 at	279,309
1892 „	310,472
1893 „	303,975
1894 „	324,405

Although it may be yet rather early to offer any safe statement as to the world's production for 1895, we venture, nevertheless, to estimate it approximately, at a maximum of (say) 340,000 tons, for the following reasons:—

As is well known, there exists in London the European Producers' Committee which, every month, exchanges the figures of production with the American associated companies. The mines reporting to the London committee (which are all managed by European boards of directors or boards of administration) are:—Rio Tinto, Tharsis, Quebrada, Cape, Wallaroo, and Moonta, Mason and Barry, Namaqua, Mansfeld, and Boleo. The American associated companies represent in the Montana district: Anaconda, Butte, Montana, Parrott,—In the Arizona district: Verde, Arizona, Queen, Detroit, Dominion; and, in the Lake Superior district: Calumet, Tamarack, Quincy, Isceola, Atlantic, Franklin, Tamarackja, Keasarge, Valverine, Central.

The items exchanged between these two corporations are as follows:—

	1893. Tons.	1894. Tons.	1895. Tons.
European Producers' Committee	81,790	88,491	86,178
American Associated Companies	129,800	142,473	155,367
	211,590	230,964	241,545

This gives, for 1894, as against 1893:

	Tons.
Plus for Europe.....	670
„ America	12,673
Plus Total	19,374

And, for 1895, as against 1894:

	Tons.
Minus for Europe.....	2,313
Plus for America	12,894
Plus Total	10,581

For the two years, 1894 and 1895, the increase of the production in America amounted to about 12,000 tons per annum.*

* The American production was distributed as follows:—

1894	1st Half-year 73,951 tons.	1895	1st Half year 70,612 tons.
	2nd „ 68,522 „		2nd „ 84,7.5 „

That is to say: in unequal portions for the two half-years.

(*To be continued.*)

BRITISH GUIANA'S GOLD INDUSTRY.

The gold entered at the Customs Department by the British Guiana Bank on January 23 for shipment per R.M.S. *Solent*, which sailed that afternoon, amounted to 1505 ounces 18 dwts. 10 grains value $27,090. The British Guiana Bank was the only shipper. The following is the amount of gold entered on February 5 for shipment by the R.M.S. *Solent*, and the names of the shippers:—

	Ozs.	dwts.	grs.		
Colonial Bank ...	1672	18	0		
British Guiana Bank	2191	6	17		
Total... ...	3,864	4	17	...	Total Value $68,341·13

The following is the return of gold entered at the Department of Mines for week ending February 8:—

	Ozs.	dwts.	grs.
Potaro	836	11	23
Cuyuni	615	10	12
Barima	460	16	11
Essequebo	360	18	22
Barama	74	2	1
Pomni	22	18	2
Groote Creek	21	3	4
Total, ...	2392	1	3

MEETINGS OF MINING COMPANIES.

THE CENTRAL EXPLORATION COMPANY OF WESTERN AUSTRALIA, LIMITED.

THE ordinary general meeting of the shareholders in the Central Exploration Company of Western Australia (Limited) was held on Thursday, at Winchester House, Mr. JAMES JACKSON (Chairman of the company) presiding.

Mr. C. K. ROGERS (secretary) read the notice convening the meeting.

The CHAIRMAN, who was received with cheers, said: Gentlemen—As you are all doubtless aware, this company was formed for the specific purpose of acquiring certain mining leases, and for the general purposes of investment in gold and kindred properties in West Australia. The titles having been found in order, the mining leases mentioned in the prospectus have long since been transferred to this company, and the exploration and development of the ground has been vigorously pushed forward, in some cases, with even more satisfactory results than were originally anticipated, whereas in others the promises held out in the reports of competent authorities, on which the properties were purchased by this company, have so far not been fulfilled. I think I cannot do better than follow the lines of the printed report, which is in your hands, in giving an account of these several properties, elaborating and supplementing the information therein contained as occasion may seem to require, and conclude with the customary reference to any figures in the accounts which may call for explanation. The most important of our properties, judged by the standard both of size and the value disclosed by its development, is the Black Flag. The results of exploration here were so satisfactory as to enable us in August of last year to float the Black Flag Proprietory Company (Limited), and after making provision for £75,000 working capital for that company, and further providing for the interest retained by the original vendors of the property, and also for the remuneration of those who provided the working capital, this company—the Central Exploration Company—retains an interest of 199,000 shares in the Black Flag Proprietary Company. It was not an easy task at that time—August of last year—to secure the large working capital which your directors deemed prudent should be set aside for the proper working of these mines, but I am happy to say, with the very strong support given to us by the principal shareholders in the vendor company, the difficulties were overcome, and we feel confident that ample funds are now at command for the working of the Black Flag Company on a very large scale. The reports which have from time to time been received of the developments of this property since it passed out of our hands, show that the engineer in charge fully appreciates the responsibility he is under to bring the undertaking into a paying state at as early a date as possible. A 50 stamp battery and all accessories has been sent out, and ought to be already on the way up to the mine. The report recently published by the Black Flag Company, which doubtless many of you will have seen, shows that a vigorous policy is being pursued, and that the directors are confident that the mine will turn out a marked success, a confidence that is fully shared by this board, so much so that we have not considered it at present advisable to part with more than a very small portion of our interest (and that only at a very considerable increase on the price at which the shares were valued in the accounts), to provide the necessary funds for the payment of the dividend recommended in the report, and submitted for confirmation at this meeting. Passing to the next property referred to in the report—the Crœsus North No. 1 Mine—the exploration for this lease was attended for some time with disappointing results, and it is only after much perseverance and an alteration in the plan of the operation introduced by a mining engineer sent out from England, that we have obtained unquestionable evidence of the great value of the property. There are a number of reefs running through the ground; one called the Green reef, which has proved rich in the adjoining Crœsus lease, was that on which we largely depended to make the fortunes of our block. We still have reason to expect that we shall not be disappointed with it; so far, however, we have not been able to determine the exact strike and dip of this reef, and cannot, therefore, estimate with any degree of accuracy how much of it we possess within our boundary. Discoveries in another quarter have now, however, removed all necessity to depend wholly on the Green reef. The recent most satisfactory developments have taken place on another lode known as the main reef. Sinking on it has reached 136 feet, at which point the reef is 34 feet wide, a portion 5 feet of which assays as high as from 5 to 11 ounces, the remainder from 1 to 5 ounces per ton. The latest written accounts we have state the position so clearly than I cannot do better than quote them verbatim:—"The prospects of the mine appear at present second to none in this district. The lode has been followed down from the surface for 136 feet, carrying gold nearly all the way. No. 1 crosscut was driven through 35 feet of lode formation, with payable gold all through, and a few feet near the footwall is exceptionally rich, showing gold at every stroke of the pick." "The No. 2 crosscut at the bottom of the shaft parallel with No. 1, and 93 feet south of it, is 24 feet from hanging-wall to footwall, and the lode matter is of the same character and value as that proved in the first crosscut." The developments already met prove the existence of a large body of highly auriferous lode matter, which will, in all probability, traverse the whole length of your section. The completion of the main shaft and erection of winding appliances will enable you to work the mine in an expeditious and economical manner." From this it appears that at two points, 93 feet apart, the character of the reef is the same, the natural inference being that the intervening mass carries the same high value. The latest telegraph report states "recent developments most favourable—believe it to be exceedingly valuable." This main reef, which is reported to resemble the formation of the Great Boulder, runs for a distance of at least 600 feet through our property, and apart from any reefs that may be discovered in other portions of the ground, is sufficient in itself to establish the undoubtedly high value of our holding. The exploration of the John Dunn and Hopetoun properties has, so far, revealed nothing to confirm the more than encouraging reports which we got before the purchase of these leases. An application has been made to the engineer who made these reports to re-visit the properties, and state what course he recommends in the light of the subsequent development. After our experience in the Crœsus No. 1 North, it is quite probable that further and more systematic prospecting may change the whole aspect of affairs by leading to the discovery of the reefs which are believed to run through the John Dunn and Hopetoun leases. Turning now to the other properties which the company has acquired, a half interest has been purchased in a block of 18 acres immediately adjoining the Black Flag to the north, through which the Black Flag Proprietary Company's reefs run. The developments have so far resulted most favourably, the reef being of the same character as further south, 21 feet thick, and of payable quality. The flow of water—a most important consideration—had, by last accounts, reached 5000 gallons a day, and was steadily increasing. We are now in negotiation for a half interest in an addition to this block of 12 acres in extent, on the same line of reefs. If we are successful in obtaining this, the two together will constitute a conveniently-sized mining area for subsequent treatment. We have secured options on most favourable terms on mining leases, comprising 42 acres in the Murchison district, which promise exceedingly well. An extension of time in order to further test these blocks of ground before becoming the purchasers has been obtained. The town sites in Coolgardie were bought at lower prices than those now ruling. One of the positions has been utilised for the erection of a complete assay plant and office. An experienced assayer is now superintending the erection of the buildings, and under his guidance the undertaking promises not only to be of service in the work of the company, but also to constitute a considerable source of profit. Passing to the accounts, these call for but little comment, I may mention, however, that the London expenses include travelling expenses of employés sent out to Australia and certain sums advanced to them, which latter sums were subsequently debited to their respective accounts in Australia, consequently the amount stands at a higher figure than represented by the actual position. The next item—the Australian expenses—is largely comprised of salaries, which in a country like Western Australia, where the expense of living is great, are naturally high. The sum will, of course, vary from time to time, according to circumstances and the amount of business transacted; for the moment it is somewhat reduced by the fact that Mr. A. F. Gray, our local director in Western Australia, whose fees were included in this item, has retired from that position, and our original manager, whose term of office overlapped that of the gentleman who now controls our affairs, is no longer in our employment. Travelling expenses in a dry country like Western Australia, with horse hire and forage at exorbitant rates, constitute a heavy item. The cost of cablegrams homewards, in reporting on the different properties and options under offer, also forms a heavy charge. The preliminary expenses, you will notice, as stated in the report, have been written off. Taking the balance-sheet, there is nothing on the debit side calling for notice, except that the sum of £986 13s. 1d., under the head of sundry creditors, has since been extinguished. The mode of valuing the assets has been explained in the directors' report and by the auditors' certificate. The amount owing by sundry debtors has already, with the exception of a few pounds, been discharged. I venture to think that the profit shown by the account will be deemed by you as most satisfactory. I have now to move—"That the report and accounts as presented be received and adopted, and that a dividend at the rate of 10 per cent. per annum on the nominal ordinary capital be paid on or before March 21 to the shareholders now on the register." I will call upon Sir William Davies to second the resolution.

Sir WILLIAM DAVIES, K.C.S.I. (director) said: Gentlemen—I beg to second the resolution which you have just heard read. The Chairman's speech has been so clear and so full that I need not, I think, add anything to it.

A SHAREHOLDER: May I ask why such a large balance as £42,000 should be carried forward?

The CHAIRMAN: The reason that that amount has been carried forward is that the profits of the company have not yet been realised into cash. We have only realised, as has been stated, both in the report and in my speech, sufficient to pay the dividend that we now propose to pay.

The CHAIRMAN, speaking in answer to various questions, said—I will answer the questions *seriatim*. This company is an exploration company, and it is not its intention to retain its shares for an indefinite period. It will be within the recollection of many gentlemen present that at our statutory meeting a strong wish was expressed that we should retain a large interest in the Black Flag Company, and it was in obedience to that request that our policy has been shaped as it has. We were also under certain obligations with regard to the shares we held, not to sacrifice the property in any wanton manner. But, as occasion arises, we certainly shall dispose of those shares. With regard to the second question, as to whether we have a sufficient amount of money now to pay the dividend—that is explained by the fact that these accounts are made up to December 31, whereas we have since realised shares in order to pay the dividend as I explained in my speech. With regard to the John Dunn property, the reports are set forth in the original prospectus, and it was upon those reports that we bought the property. I do not know that it would serve any purpose to mention the gentlemen who made these reports; they were certainly sufficiently favourable to induce us to acquire these properties. Of course, in all gold mines there are a great many failures and also a great many successes. So far, we have scored a fair proportion of the successes, and we hope to score more. (Cheers.) Our experiences of Crœsus North No. 1, which is now turning out very well indeed, were extremely disappointing at first; in fact, if I had been asked some months ago which I liked best, Crœsus North No. 1 or the John Dunn, I would have said the John Dunn. I hope now that the result of our explorations will be that we shall find those reefs which we have good reason to believe run through the John Dunn property. (Cheers.)

The resolution was carried unanimously.

The CHAIRMAN: The further business before the meeting is to elect auditors and fix their remuneration.

Mr. BURT: I have pleasure in proposing that Messrs. Harvey, Preen, and Co. be appointed auditors of the company at a fee of 50 guineas.

A SHAREHOLDER: I have great pleasure in seconding that.

The resolution was carried unanimously.

The CHAIRMAN: That, gentlemen, concludes the business on the agenda.

Mr. EMMOTT: Gentlemen—Before you go, will you join me in passing a vote of thanks to the Chairman and directors? In asking certain questions I wished to elicit information that would be of interest to shareholders, and I am very much obliged to the Chairman for the answers he has given to me. I beg to propose a hearty vote of thanks to the Chairman and directors.

A SHAREHOLDER: I beg to second the motion.

The motion was carried by acclamation.

The CHAIRMAN: I am much obliged to you, gentlemen, for this expression of your confidence, and in reply to what the mover has just very kindly said, I can only say that I welcome those questions, and am always glad to answer them to the best of my ability. I think the shareholders ought to be in possession of all reasonable knowledge with regard to the property—that is to say, knowledge that does not actually interfere with the internal working of the concern. (Cheers.)

The meeting then terminated.

THE RHODESIA GOLD FIELDS COMPANY (LIMITED).

The annual general meeting of the shareholders in the Rhodesia Gold Fields Company (Limited) took place at Cannon-street Hotel, on Tuesday.—Mr. H. Partridge, who presided, in moving the adoption of the report and statement of accounts, said that most of the securities were, in the first instance, purchased, but had now been realised at a profit, and the proceeds invested in more remunerative securities, which the board had selected with the greatest care. The capital now paid up was £355,000. Of this the average amount in the hands of the directors during the year had been about £170,000 or £180,000, so that the profits obtained in 1895 had been earned on a capital of half the amount at which it stood to-day. About a third of the investments held by the company at the present time were in Rhodesia in various companies, and in every case they were standing at better prices than those at which they appeared in their books. Another third was in the Transvaal, in what were believed to be the most promising ventures on the Rand; but this money was placed there only until such time as it could be advantageously invested in Rhodesia. The remaining third of their capital was in cash or in loans against securities which could be turned into cash within 14 days. The securities forming the first two-thirds of their capital could be sold to-day at a substantial profit. Apart from them, however, they held various interests in Rhodesia. They had a certain number of stands in Buluwayo, Salisbury, and Gwelo. All these stands were purchased at low prices, and the board looked to them to turn out a profitable investment. Then they had various interests in coal areas and in different concessions in Rhodesia on which, so far, they had placed no value in the balance-sheet. Having made so large a profit several shareholders thought that a larger dividend than that recommended ought to be paid. The board, however, felt that 1895 was an exceptional year, and that they had been fortunate in not having made a loss during the heavy "slump" which arose out of the troubles in the Transvaal at the end of the year. The profit of £51,000, he desired to state, was legitimately earned, after writing off the whole of the formation expenses and providing for depreciation on investments. Probably most of the shareholders had read the report of the British South Africa Company. That report dealt with the whole country in which they were interested, and no doubt they were all astonished at the marvellous progress made during the past year, but they were all looking forward to the still greater progress which it was expected to make on the completion of the railways to Salisbury and Buluwayo. He understood that the whole of the plant for those railways was ordered. Part of it had been shipped, and not a single day's delay would take place in laying the rails and connecting in this way the two centres of Rhodesia with the outer world. He then moved the adoption of the report and the payment of a dividend of 1s. a share, equal to about 10 per cent. per annum on the money paid up to December 31 last. —Mr. Farmer seconded the resolution, and it was carried unanimously.—The auditors (Messrs. Fuller and Wise) were reappointed, and the meeting terminated with a vote of thanks to the Chairman and directors.

DARLOT EXPLORATION COMPANY OF WESTERN AUSTRALIA (LIMITED).

The adjourned statutory general meeting of the shareholders in the Darlot Exploration Company of Western Australia (Limited) was held at Winchester House, E.C., on Monday.—Colonel Loyd, the Chairman, stated that since the meeting held on February 17 the directors had ascertained that the sum to be paid for the Darlot Mine (£175,000) was too much, a rather unfavourable report on the property having been received. Immediately they communicated with the vendor, who, on hearing of the unsatisfactory report, offered to reduce the price to £75,000 and throw in another property, 72 acres in area. The board, after due deliberation, considered that they were justified in accepting the new offer, and as far as the reports received by them went, the additional property to be acquired was thought to be a very good one. The Chairman then read the report made by Mr. Fearby, in which the writer stated that he was favourably impressed with the appearance of the reefs already discovered by the little development work that had been carried out. Colonel Loyd also mentioned that Mr. Lapage had consented to accept the post of managing director of the company. They had already purchased two winding engines, and everything possible was being done to ensure the success of the venture. In regard to the call due last January it was unnecessary to make it then, but when the one due on March 31 was made the two would be combined.—A long discussion ensued, in which several of the shareholders expressed the opinion that the best course to adopt would be for the company to be wound up. It was contended that as they had been mistaken over the Darlot Mines, it was also likely that the expectations held out in regard to the new property would not be fully realised. Eventually two reports from experts who had examined the Darlot Mine were read. One was of a fairly satisfactory character, and the other, on which the directors based their opinion that the mine was not worth the price asked, was also not so unfavourable as was supposed by the shareholders who had expressed their views on the matter.—The suggestion that the company be wound up was not seconded, and, therefore, fell to the ground, only one or two speakers refusing to endorse the directors' policy.—The meeting concluded with a vote of thanks to the Chairman.

THE HEIDELBURG ESTATES AND EXPLORATION COMPANY (LIMITED.)

An extraordinary general meeting of the shareholders in the Heidelburg Estates and Exploration Company (Limited) took place at Winchester House, E.C., on Monday, for the purpose of confirming the resolution passed at a previous meeting, authorising the increase of the company's capital to £150,000 by the creation of 50,000 shares of £1 each.—Sir David Evans, who presided, formally moved the resolution.—Mr. Birch seconded the motion, and it was agreed to.—The meeting then terminated.

DON PEDRO GOLD MINING COMPANY (LIMITED).

A general meeting of the shareholders in the Don Pedro Gold Mining Company (Limited) took place at Winchester House, E.C., on Thursday, Sir F. Dixon-Hartland, M.P., presiding, to consider the report of the shareholders' committee appointed to enquire into the company's present position, and recommend what course should be pursued in future.—Mr. Jacobs, in moving the adoption of the report, explained the committee's recommendations. In regard to the Maquiné Mine, they agreed with the directors that it should be worked only so long as it was found to pay expenses. Their opinion of the Santa Anna Mine was a decidedly favourable one, and if the prospects were realised the shareholders would be enabled to get all their money back. As to the call, the committee did not agree with the directors that 7s. 6d. a share would be required, thinking that 5s. would be quite sufficient for the purpose, not only of paying off the present debentures, but also for giving the mine a fair start. They had given the matter their careful consideration, and were unanimous in the belief that the shareholders might look forward with every reasonable prospect of success.—Mr. Miller Hooper seconded the resolution, which, after some discussion, was carried unanimously.—The Chairman formally moved the adoption of the accounts, which had now been certified by the auditors as correct.—Mr. Tollput seconded the motion, and mentioned that the return for February from the Maquiné Mine was 271 ounces from 451 tons, and that they were advised that the mine would pay for working for about another six months.—The resolution was put and carried.—The adjourned general meeting was then held for the purpose of passing the resolutions authorising the reconstruction of the company.—On the motion of the Chairman, all three of the necessary resolutions were carried unanimously.—Votes of thanks to the shareholders' committee and the Chairman terminated the proceedings.

HALKYN MINING COMPANY (LIMITED).

The annual general meeting of this company was held on the 2nd inst., when a final dividend for the year ended December 31, 1895, of 8s. per share was declared, making the dividend for the year 75 per cent.

GENERAL BANKING AND MINING CORPORATION (LIMITED).

An extraordinary general meeting of the General Banking and Mining Corporation (Limited) took place at Winchester House, E.C., yesterday, Mr. H. A. Martindale-Vale presiding.—The Chairman formally moved the confirmation of the following resolutions: (1) "That the 500,000 shares of the company of the nominal value of £1 each, be consolidated into 100,000 shares of a nominal value of £5 each;" (2) "That the words of Article No. 86 from 'longer time' to the end of the article be deleted, and the following be substituted therefore: 'As an additional annual remuneration, the directors shall be entitled to 5 per cent. of the net profits available for distribution as dividend in each year, after payment in such year of a minimum dividend at the rate of 7 per cent. per annum, such additional remuneration to be distributed amongst the directors according to their attendance at board meetings.'"—The resolutions, having been duly seconded, were unanimously confirmed, and the meeting concluded.

NEW CASSEL COAL AND EXPLORATION OF SOUTH AFRICA.

A circular to the shareholders states:—I beg to inform you that Mr. Crosby, late manager of the Maggie Mine, has accepted the position of engineer and manager to this company in South Africa, and that he has been in charge of the company's collieries since January 1 last. Work has commenced, and the machinery required has been ordered from Messrs. John Fowler and Co. We anticipate a large demand for the company's coal, which is of superior quality. A cable has been received, dated March 4, 1896, stating that the property has been transferred to and registered in the name of the company. Kindly note the offices of the company have been removed to 39, Old Broad-street, E.C.—By order of the board Charles O. Greenwell, secretary.

CORRESPONDENCE.

We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

AMERICA AND THE BESSEMER PROCESS.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Judging by the claims that have been put forward for Mr. Kelly, as against Sir Henry Bessemer, in the annual presidential address delivered at the recent Pittsburg meeting of the American Institute of Mining Engineers by Mr. J. D. Weeks, it would appear that this gentleman is very desirous to make amends to the Spanish nation for the action of the American Senate in the matter of the Cuban revolution. Such, at any rate, must be the opinion of those Spaniards who regard their country as the birthplace of steam navigation. If Mr. Weeks' arguments are to prevail, then the fame of Blasco de Garay must eclipse that of Robert Fulton, and with so much greater justice in this case, as 260 years' exceeds seven, the number of years by which Kelly is said to have anticipated Bessemer's discovery.

If claims to inventions are to be wrested from those to whose names they are attached by the method of Mr. Weeks, it will fare badly with other inventors, besides Sir Henry Bessemer, Kelly himself amongst the number. Turning, for example, to patent No. 3944 of the year 1815, we find mention of metal not being sufficiently decarbonated, or "not high enough blown," which by the logic of Mr. Weeks is a very clear anticipation of all subsequent pneumatic processes.

As few of your English readers can have easy access to American sources of information, Sir Henry Bessemer's reply, which deals with Kelly's claims, may be usefully supplemented by the following references regarding the source from which the Americans obtained their knowledge of the Bessemer process.

A. L. Holley's name occurs many times in the presidential address referred to, and apparently to give weight to Kelly's claim—or the claim made for him. Like other authorities, however, this one may be cited on either side. Speaking at Washington, D.C., on February 22, 1876, when Holley worthily occupied the very post now held by Mr. Weeks, he said to the assembled mining engineers—"Proceeding upon a chemical knowledge little superior to that of the average schoolboy, Bessemer developed his revolutionary progress." I cannot find any mention of Kelly in the whole address. How obscure Kelly's experiments must have been, and how little America is indebted to him, may be inferred from the numerous references that were made over the grave of Holley to the source of the latter's knowledge.

At the memorial session of the institute over which Mr. Weeks now presides, held at Washington, February 22, 1882, Mr. A. S. Hewitt, an ex-president of the institute, said:—"I think that I first called his attention to the Bessemer process—I mean to the subject of its introduction into this country. My firm had made a feeble effort within six weeks after the famous Cheltenham paper was read in 1856 to see whether pig iron could be thus converted into steel. It was three or four years, perhaps, after that, that Mr. Holley's attention was called to the matter, and he went to Europe and brought back for his friends the control of that patent." It is strange Kelly's fame should at this time have been so obscure if his achievements were what Mr. Weeks would wish us to infer.

Mr. P. Barnes, of Springfield, Ill., speaking at the same meeting, said:—"My acquaintance with our good friend Holley began just before he went abroad to arrange for the definite introduction of the Bessemer process into this country, and after January, 1869, I was until the day of his death almost continuously employed, either as an attaché of his own private office, or else in local charge of some one or other of the works with which he was associated. . . ." No mention is made by Mr. Barnes, who was so intimately connected with Holley in the Bessemer industry, of any inspiration derived from Kelly.

I cannot find any reference to other than English practice as the starting point of that marvellous American development of the Bessemer industry from which no one who is acquainted with it can withhold admiration.

At the memorial session of the American Society of Mechanical Engineers, held at Philadelphia, on April 19, 1892, Mr. James C. Bayles said, in his "tribute" to Holley:—"We cannot fail to find interest in how this (present extent and prosperity of the industry) was brought about, chiefly by Holley's persistent industry and close study of details. Fully impressed with the possibilities of the Bessemer process, as he had witnessed its workings in England, he inspired others with his own enthusiasm." And again:—"Early in the history of this industry Holley seems to have concluded that the best foreign practice was merely a starting point for an ingenious American engineer to work from." And yet again:—"Bessemer, probably, has more claim to recognition as a great inventor than Holley; but if we compare the two men, we see strikingly exemplified the difference between the inventor and the industrious engineer. Where Bessemer left the process which bears his name, Holley's work began. It was full of possibilities. . . ."

Mr. J. C. Hoadley, of Boston, Mass., also said at the same meeting—"A few years later, in 1863, I met him (Holley) in London. He was seeking at that time to make arrangements with Mr. Bessemer for the manufacture of Bessemer steel in this country. With a perspicacity entirely characteristic of the man, he had perceived the transcendent importance of this invention, which was almost unnoticed by the world, and before Mr. Bessemer had ever received a shilling of legitimate compensation for his invention." And further on—"In that stage of the invention, Mr. Holley, perceiving its great importance, with his own true-hearted loyalty, went directly to the man who had invented the process to get at the very limit—the utmost outpost of the invention, and we all know how much further he has carried it."

Need any more be said on the subject of Kelly's claim?—
Yours faithfully,
F. J. R. CARULLA.

Argyll Terrace, Derby, March 7.

MINING IN THE MALAY PENINSULA.

TO THE EDITOR OF "THE MINING JOURNAL."

DEAR SIR,—I have read with much interest your articles on "Mining in the Malay Peninsula," and note the reference in your issue of the 7th inst. to the auriferous gold belt traceable for 400 miles from north to south, and with reference to this belt I would call the attention of your readers more particularly to the State of Johol, in the south of the Peninsula, through which it passes, and to the extraordinary facilities for the profitable working of the reefs situated at Gedoh in that State. One of the most salient features of gold mining there is the cheap and abundant labour. The labour mostly employed is Chinese, and is paid at the rate of 6s. per week, as against £1 per week, which the Kaffirs receive on the Rand, and the Chinaman is certainly the better worker of the two.

With regard to the transport, which, it is needless to point out, is a matter of the greatest importance in a new country, the reefs are even now most favourably situated, being within 35 miles of the sea port of Malacca, and approached by an excellent cart road. Transport will be further very much facilitated on the completion of the railway connecting the State with Malacca. As to water and timber, there is an unlimited supply of both; and, at the same time, no difficulty need be anticipated in dealing with the former in the mines, as the outcrops of the reefs now under consideration are situated on high ground.

Mr. J. E. de la Croix, a French mining engineer of great repute, and long resident in the Malay Peninsula, says, with regard to the reefs at Gedoh, that they are well defined, being from 3 feet to 6 feet in width, and become richer as the depth increases. He crushed and washed quantities of the quartz, and obtained from 2 ounces 4 dwts. to 2 ounces 8 dwts. of free gold per ton of quartz.

Mr. Christie Palmerston, an Australian expert, who has prospected these reefs, states in his report that the greater portion of the claims now owned by the W. W. Development Syndicate "are a perfect network of reefs and quartz veins," and strongly advocates their immediate development.—Yours, &c.,

MALAYA.

HUXLEY MEMORIAL.

TO THE EDITOR OF "THE MINING JOURNAL."

DEAR SIR,—Since last a public announcement was made, the names of Sir H. H. Johnston, K.C.B., H.M. Commissioner and Consul-General in British Central Africa, and of Mr. Charles Hose, Resident Magistrate at Sarawak, have been added to the General Memorial Committee, which now numbers considerably over 700 persons, representative of science, literature, and art in all parts of the world.

The amount promised and received now exceeds £2300, and as a sufficient sum is thus guaranteed for the Statue at the British Museum of Natural History, and the Medal at the Royal College of Science, London—the two first objects of the committee definitely decided upon—sub-committees have been appointed to carry these objects through, and designs for the Statue are now being prepared by Mr. Onslow Ford, R.A.

Appeal is now being made for the third object of the committee, viz.:—"The furtherance of biological science in some manner to be hereafter determined dependent upon the amount collected." The foundation of exhibitions, scholarships, or lectureships, has been proposed, and for this purpose a considerable sum will be required. The efforts of the committee to raise this are being promoted by the organisation of local committees in all parts of the world. Donations of any amount will be gladly received by the hon. treasurer, Sir J. Lubbock, Bart., or the bankers, Messrs. Roberts, Lubbock, and Co., 15, Lombard-street, E.C., or by myself.

A circular is now printed for distribution in lecture rooms and elsewhere, and I should be very glad to communicate with friends or admirers of the late Professor Huxley, or with persons connected with societies or institutions, who may be willing to aid the Memorial Committee by distributing copies of this, or in any other manner.—I am, Sir, your obedient servant,

G. B. HOWES,
Hon. Sec. Huxley Memorial Committee.

Royal College of Science, South Kensington, March 13.

MINING IN CORNWALL AND DEVON:

NOTES ON MINING IN THE WEST.

(FROM OUR SPECIAL CORRESPONDENT.)

THERE is very little to record in connection with the mining industry in the West this week. No important meetings have been held, and nothing of importance has transpired regarding the several reconstruction schemes which are in progress. It appears, however, that yet another enterprise, which was at one time regarded as of grand promise, is about to succumb to the adverse circumstances of the times. Wheal Friendly shareholders will meet next Tuesday, in London, when a proposal to voluntarily wind up the affairs of the company, and to appoint liquidators, will be submitted. The mine adjoins West Kitty, one of the most successful concerns in Cornwall, and when operations were commenced, confident hopes were entertained that the mine would rival its neighbour in richness. It cannot be said, however, that the shareholders have ever shown a disposition to work the mine with energy, or on the scale which alone in these times can secure success. Wheal Friendly does not employ many hands, but at the present juncture every addition to the ranks of the unemployed is a serious matter. Should the long hoped for improvement in the price of metal come about, it is not likely that the sett will be permanently abandoned, for it cannot be said that it has been fairly proved as yet.

IT is stated with some show of authority that Carn Brea and Tincroft shareholders will be called together before the end of March, to consider a Limited Liability scheme. The committees met last week, and the information then laid before them was decidedly encouraging. Mr. W. C. Pendarves, who is the lord of several mines in the locality, including South Condurrow, but has no territorial interest in Carn Brea and Tincroft, has promised to take 500 shares, and it is hoped that other leading Cornishmen will follow him and the lords of the two mines in their practical demonstration of sympathy with the industry in its time of sore trial. One of the features of the new scheme will, it is said, be the relief of the present shareholders from any payments to the mine until the new shareholders have paid a certain amount, and in view of that the old shareholders may possibly consent to take certain responsibilities on themselves in regard to their old shares. The beneficial effect of the new proposals in staying the tendency towards panic which had begun to manifest itself is proved by the numerous applications for shares in Carn Brea which had been relinquished.

THE desire for dividends, without regard to the advisability of declaring them, has not entirely disappeared with the Cost-book system which fostered it, and several Dolcoath shareholders have been writing to the papers, criticising the directors for not distributing the profit of £3000 odd which was shown at the ordinary general meeting. As an interim dividend before the end of March was clearly foreshadowded, it is not very easy to see what the grumblers have to complain about, and there are not a few shareholders who would be quite content to forego all dividends for the present, and to see the management devote all the resources of the mine to those development operations which are so imperatively necessary if permanent success is to be obtained.

CAPTAIN WILLIAM JAMES, manager of the Basset Mines, recommends the sinking of Marriott's shaft perpendicular. He estimates that this will save not less than £1000 per annum in pumping charges, £1200 in drawing stuff, and reducing men up and down more quickly. He does not approve the suggestion to place an engine on Daubuz's shaft. The directors of the mines are inviting tenders for driving 2000 fathoms of ground by rock drills.

SIDE LIGHTS ON THE LAW:

Legal Jottings on Cases in the Courts, and on Questions affecting Mining, Railway, Financial, Industrial, and allied Interests.

BY A BARRISTER.

IF I and others agree to become surety for a friend for the due repayment of a loan of money on the condition that each of us shall be liable for one-third of the amount of the loan, and ultimately one of my co-sureties undertakes only to be responsible for an amount less than one-third, I am at once released from my suretyship, and I am not liable to pay even the one-third I undertook to pay. A case of this kind was decided a short time since by the Lord Chief Justice and Mr. Justice Cave, in which this principle was enunciated and explained. Four persons had executed a joint and several bond as sureties for the repayment by a fifth person of £150. By the terms of the contract the liability of the first two persons—Smith and Brown—was to be limited to £50 each, and that of the second two sureties—Jones and Robinson—to £25 each, making £150 in all. The bond, having been signed by Brown, Jones, and Robinson first, was taken to Smith, whose liability by its terms was to be limited to £50; he, however, on signing it, added to his signature, "£25 only." The bond so executed was received by the friend for whose benefit the suretyship had been entered into, and was accepted without question by his employers as a guarantee that he would properly perform his duties as their servant. The friend receiving moneys for which he failed to account, the sureties, Smith, Brown, Jones, and Robinson, were called upon by the employers, proportionately to their several liabilities, to make up the deficiency, which was in all £48, and for this amount the employers brought their action against the sureties. It was held, however, that they were not liable for a single penny. The reason at first may not be quite apparent, and the plaintiffs no doubt thought it hard law, but it appears to be sound sense, and worth the following with some care.

IT was naturally urged for the employers that the fact that Smith had limited his liability to £25 did not affect or prejudice the others, as it was immaterial to them whether he signed for £25 or £50, and the liability of £48 was only £12 each—an amount below the amount each of them had placed as their limit. This contention was, however, soon disposed of, for the principle upon which sureties are called upon to contribute is rateably according to their liability. Thus, Brown's liability, before the alteration as between himself and co-sureties, stated as a proportion sum, would be as £150 is to £50, so is £48 to the result—namely, £16. If, therefore, he was called upon to pay the whole £48, he would be entitled to call upon his co-sureties to contribute according to the terms of their subscription. Suppose, therefore, Brown paid the £48, his share would be one-third, or £16, and he would be entitled to call on Jones and Robinson for a sixth each, or £8 apiece. Then as to Smith. He had clearly limited himself to a liability for a sixth, or £8 also, and Brown would still be short of £8 of the contribution he was entitled to look for at the time he signed. In this view of the matter, it was clear that the alteration in the term of the bond was a material one, and Brown, Jones, and Robinson were each entitled to say the contract I entered into was on the basis that Smith's liability was a third, and that is not the contract as it now appears, and, therefore, I am not liable. If, then, Smith has, in good faith, joined in a contract on the condition that Jones, Brown, and Robinson should be responsible, so that in the event of his having to pay he may have recourse to them for their contribution, and it turns out that those sureties are not bound by the contract, he also is entitled to say:—"This is not the contract I entered into, and I am, therefore, not bound by it."

THE inability of prisoners to give evidence on their own behalf appears likely to be shortly removed. The Lord Chancellor has introduced a Bill for this purpose, and it has already passed its third reading in the House of Lords. The tendency of legislation throughout the century has been in the direction of removing the restriction put upon interested persons by the law which prevents them giving evidence in their own behalf. Formerly, neither plaintiffs nor defendants in civil actions could be heard. After they had been permitted came the turn of the defendant in some summary proceedings before magistrates of a quasi-criminal nature. Then tentatively the prisoner accused of offences against the person was allowed to be examined if he so desired. The result has apparently been a general consensus of opinion at the Bar and on the Bench that the removal of this restriction is right in the interest of justice. The Lord Chief Justice himself, who it will be remembered in the course of last summer circuit, allowed, a prisoner, who had elected to be examined, to be cross-examined as to his having been previously convicted, attended in his place in the House of Lords, and introduced an amendment to the Chancellor's Bill. The Chancellor proposed to prohibit such cross-examination. Lord Russell, however, thinks it should be left to the discretion of the Judges. If the Bill passes as it now stands the prisoner, on giving evidence, may be cross-examined as to convictions if he puts his character in issue, and also if proof of his previous conviction is admissible to show that he is guilty of the offence for which he is being tried. There is one decided objection to Lord Russell's course. Judges differ much in their feelings on the subject, thinking differently as to the effect such evidence has upon a jury's mind, and, moreover, a discussion as to whether a question of the kind should be allowed will often have an adverse effect against the prisoner, even when the Judge in the end refuses to allow the question to be put.

THE summary jurisdiction given by the Act of last year to justices in petty sessions to grant judicial separations seems to be very popular, and is largely taken advantage of. The Divorce Court has already heard a number of appeals under the Act, and has expressed the hope that magistrates deciding questions of this kind, which appear likely often to raise matter for appeal, would state their grounds of fact and law for coming to their decision, and intimated that which will be of interest to magistrates' clerks, that a full note of the evidence should be taken, and that the cost of a copy of the evidence for the use of the Court on appeal would, in all cases, be allowed on taxation.

WE beg to acknowledge receipt of Messrs. W. Green and Sons (of Ickneld-square, Birmingham), new reduced price list. The firm have obtained a considerable reputation for their American flag Sphinx good, and for cut and wire tacks, wire brads, &c.

REPORTS FROM THE MINES.

BRITISH MINES.

LEADHILLS.—W. H Paull, March 9: Brown's vein. During the past week the vein in the 160 fathom level driving north of Jeffrey's shaft has been very changeable and fluctuating in produce from 10 to 40 cwts. of pead ore per fathom. In the present forebreast it is 4½ feet wide, worth 25 cwts. of ore per fathom. In the 160 fathom level going south of Wilson's shaft, the vein is 4½ feet wide, well mixed with spar, but contains no ore. The stopes over this level are producing about their usual quantities of ore. In No. 2 winze sinking below the 145 fathom level north of Jeffrey's shaft the vein is 6½ feet wide, yielding 30 cwts. of ore per fathom. The vein in drift above the 115 fathom level going south of No. 1 stope yields good stones of ore at times. No. 2 stope over the 115 north of Jeffrey's shaft is worth 20 cwts. of ore per fathom. The stope over drift above the 100 fathom level south of Wilson's shaft will yield 40 cwts. of ore per fathom. In the 85 fathom level driving south of Wilson's shaft the vein is still soft and unproductive. A stope over this level south of Wilson's shaft will produce 30 cwts. of ore per fathom. A stope above the 70 fathom level south of Wilson's shaft is yielding 70 cwts. of ore per fathom. In the 50 fathom level north of main rise the vein has further improved, now worth 40 cwts. of ore per fathom.—Raik and Highwork vein. In crosscutting eastwards at the 100 fathom level we have cut into a vein 4 feet wide, showing a strong mixture of quartz and spar spotted with iron pyrites, but no lead ore. No material change in either end driving north and south of crosscut at this level.—Brow vein. In the 100 fathom level driving west the vein is 4 feet wide, composed of a kindly stone interspersed with spar, and producing good stone of lead ore, with a little water issuing from forebreast.

POLBERRO.—Since the Pink lode was discovered in the 50 crosscut south of shaft we have driven east on its course 5½ fathoms. The lode averages 4 feet wide; it is of the same character as the rich tin lodes of the district, and, therefore, there is every chance and probability of driving into a rich course of tin at any time. The lode in the 26 east is 7 feet wide; it contains a large quantity of mundic, copper, and rich stones of tin. It has very much improved during the last few fathoms driven. This is a very important point, and I am hoping that our efforts here will soon be crowned with success. The machinery is working well, and the mine as a whole is in a better position, and looking more prosperous than it has ever been before.—(Signed) John Harper, March 7.

SOUTH CONDURROW.—March 10: The following report has come to hand in London:—There is no fresh discovery in the mine to advise you of. There is a strong kindly lode in the 40 end east, and the stopes in the back are without material alteration.—Wm. Rich.

WEARDALE LEAD.—Report on Weardale Company's mines for the week ending March 7:—Groverake. 60 fathom level east, sparry vein, but continues poor, worth 4 cwts. per fathom. Slate sill, drift east, vein poor in lower part of forehead, but improves in the top, worth 8 cwts. per fathom. Tribute ore for the week, 16 bings.—Boltsburn. Stopes in north flat from Watts' level worth 34, 30, 26, 26, and 18 cwts. per fathom. Stopes in south flat worth 8, 38, 14, and 10 cwts. per fathom. Vein stopes worth 36 and 24 cwts. per fathom.—Greenlaws. Nattrass Gill drift, rise in quarry Hazel abandoned. Watson's drift, vein in rise worth 10 cwts. per fathom; very hard to work. Race's drift, vein still divided, and poor. Stopes worth 20 and 10 cwts. per fathom. Stope in Slaty Hazel drift worth 14 cwts. per fathom. Lowe's drift, vein rather broken. Some ore in the roof, but not to value. Stope worth 10 cwts. per fathom. Quarry level, stope worth 12 cwts. per fathom.—Sedling. Driving 64 level east, vein worth 14 cwts. per fathom. Stopes above level worth 14, 16, 8, and 12 cwts. per fathom. Stopes above 56 level worth 14, 16, and 12 cwts. per fathom. The 74 level east is being driven in plate and hazel on the south side of the vein.—Ore raised for week, 53 tons; ore dressed for week, 51 tons; ore and slag smelted for week, 72 tons, producing 37 tons of pig lead.

COLONIAL, INDIAN, AND FOREIGN MINES.

HANNAN'S REWARD.—Extract from the manager's letter, dated January 31: I have to report as follows for the week ending to-day. Main shaft sunk a further depth 4 feet 3 inches, total 312 feet. We are still in the reef formation quartz and diorite, containing a considerable amount of pyrites. When I first struck this reef I took it to be the main reef, but on getting through it I found that it could not be so. The main reef lies to the east of the shaft, and underlies to the west; while the reef we have struck comes in from the west, underlying to the east; as shown in sketch. A tracing of plan, complete up to date, will be forwarded to you shortly, from which you will be able to clearly understand how this new reef, which is of some importance, lies. I shall stop sinking the main shaft at the present depth, and have a chamber cut out at 210 feet.

LONE HAND.—Progress report, dated February 4, received March 9:—Work has been vigorously put forward throughout the entire period of exemption.—Lone Hand. No. 1 shaft. At 60 feet level the work of cutting down this 6 by 3 shaft to 9 by 4 has been commenced, the work being directed towards the surface; it is intended to cut down and retimber this shaft for its entire depth—viz., 170 feet. In breaking down this shaft for the purpose of making a chamber at the 60 feet level some extraordinarily rich stone was taken out, the gold is well distributed throughout the stone, and has every appearance of being the commencement of a good pay chute. Some samples of this ore are being sent to England for your inspection. — No. 2 shaft: This shaft was originally only 6 by 3, but has now been cut down to 9 by 4 and retimbered its entire depth — viz., 30 feet. It is intended to resume sinking, and at 60 feet to drive north to form a connection with the same level in No. 1 shaft. By this means the workings will be thoroughly ventilated and permit of the economical working of the ore bodies thus developed. The cutting down of these prospecting shafts will give us two good working shafts on this lease (distant from one another 200 feet) quite sufficient for its practical working.—True Blue, No. 2 shaft. A winze has been sunk in the north drive to a depth of 12 feet with a result that, starting with no ore, a chute of stone has come in for its entire width. This stone may be conservatively estimated as equal to 3 ounces per ton It is intended to carry this winze down 30 feet, and then drive north again towards the strike of the rich ore chute developed by surface stripping, and we should reach this ground in about 30 feet.—Sunbeam. We are now crosscutting in the main shaft to cut the reef at 130 feet, and expect to reach it within the next fortnight. Generally, the prospects of the property are all that could be desired. Excerpts from the letters received March 9, from Mr. A. E. Ritchie.—London directors now at the mine. I am extremely gratified at being able to give you such good news with regard to the development of our property; the ore chute disclosed at the 60 feet level Lone Hand main shaft is a magnificent one, the value of the ore being enormous, going up to 500 ounces gold per ton, and the chief charm being that the gold thoroughly permeates the quartz as you will see later on when I send some specimens home; at present, of course, it is quite impossible to determine the extent of this rich stone. I have no proper and safe storage accommodation, and the stone is safer in the reef than anywhere else; however, the work being done in the shaft will give us some idea of its extent in depth, but the length of the chute can only be determined by driving, and there is too much necessary to be done to expend labour at present in this direction. With regard to the water, I may tell you that, in order to have an accurate idea with regard to our catchment area and the volume of water possible of conservation, I remained throughout the rain and thoroughly examined the ground and noted the flow of the water. In addition to the dam shown on our plans there is another at the east of the True Blue lease, and this could have been filled over and over again, as also could the larger one, and I was agreeable astonished to find that the neighbouring hills gave off such a good volume of water. I duly exhibited the specimens from the 60 feet level, and enclose newspaper cuttings with reference thereto; it has been admited on all sides that no finer class of quartz showing gold so beautifully distributed through the stone has ever been seen in Coolgardie. I intend packing some of the specimens and forwarding them on to you. Please bear in mind that it is impossible to judge them fairly unless you dip them one by one in a basin of water. From the way in which the gold is imbedded in the solid rock you may not perhaps form a great idea as to the value of some of the specimens, in which case send them to be assayed, and I am certain the result will astonish you. At the present time it is utterly impossible to estimate the extent of this rich stone, but as we proceed upwards from the 60 feet with the work of enlarging the shaft from 6 by 3 to 9 by 4, we will be able to judge how far up towards the surface it extends. I do not anticipate that we will find much there, but am confident that from the 60 feet to the 105 feet we shall be on rich ore all the way. So soon as the work of cutting down the shaft to the 60 feet level is completed we will prospect at this level, and test the value of this find. At the 105 feet level there is a magnificent body of stone, and the gold here occurs in rich threads right in the solid quartz, but here again the work is not in a sufficiently advanced stage for an estimate to be formed of the extent of this rich ore. I have also got some splendid stone showing gold in large quantities from the most easterly reef on the True Blue, and there is not an opening on the property where pay rock is absent. You may rest quite assured that so soon as we can get to work with the mill the results will be satisfactory to all concerned. I have practically lived on the mine since I came out, and as I have done all the dollying myself, I know the property thoroughly from end to end, and I am quite satisfied that we have a thoroughly good, genuine show, than which I have seen none better on the fields.—The *Coolgardie Review*, of January 25, has the following:—"Mr. Ritchie, director of the Lone Hand, brought some samples of rock from the 65 feet level, and also from the 105 feet level of the mine to the *Review* office for our inspection. The rock was a beautiful white sugary quartz, in which the gold was sprinkled in a manner suggestive of big returns and fat dividends."—And the *Coolgardie Gold Fields' Courier*, February 1:—"The rich stone from the Lone Hand Mine, 25 mile, mentioned in the *Golden Age* last week, was brought into Coolgardie on Thursday by Mr. Ritchie, director, with the object of forwarding the collection on to London. The specimens, together with several new ones taken from the 105 feet level, were exhibited at the Victorian Hotel, on Thursday, and were very much admired."

MACKENZIE GOLD.—Glenloth Gold Mine, Coolgardie, January 28. Report on mine works from November 30 to 24th inst.:—Glenloth lease. Main engine shaft has been sunk an additional 32 feet; total depth from surface, 107 feet. Ground still very hard with granite rock on west wall of shaft. Have ordered sawn timber for timbering shaft. I will cut a chamber or plat on west side of shaft at a depth of 120 feet from surface, and then go on sinking unless advised by you to the contrary. I have secured four good miners to start stoping the lode stone at No. 1 shaft, and when the first stope is sufficiently advanced I will start four more miners with No. 2 stope.

NEW HAURAKI.—Capt. Hodge, January 22: I beg to hand you the following monthly report: The deep level crosscut measures to-day 306 feet. In order to push this point with vigour, eight men are now placed to work six hours shifts. At a point 275 feet a large and masterly reef was cut through, bearing 35° south of east, very nearly perpendicular, and 9 feet wide. It is of a very hard quartz matrix, and charged with oxide of iron. No doubt on being opened on at some future time, it will prove of value, but where cut through it carries no gold. This will be opened on as soon as we accomplish our object in communicating with South Tokatea winze. A large quantity of water is flowing from the said reef, which in itself is a good indication. This reef is probably the same big reef sunk on 70 feet in the present Success Mines, and which carried good prospect of gold some distance down below surface. In the deep level south-east some depth as deep level crosscut a considerable distance south, we have opened easterly on our east and west reef by two men 39 feet. A quartz leader in crossing the level embedded in clay formation altogether of a favourable character. As we gain the hill or spur we are driving into the reef will become more compact. We have every reason to believe more reef is standing southerly, to prove which we are driving to gain that point. The country rock encasing this reef is very congenial for gold. I may say that we cleaned up the south Tokatea winze, and sunk a few feet, the vein carrying a good congenial quartz 6 inches wide, and carrying much iron pyrites. We have reluctantly been compelled to abandon it on account of too much water for manual labour; we must now necessarily want our deep level crosscut to drain it. Our bushmen have completed a good sleighing track to Nicol's workings, 17 chains in length. Total distance from Success 43 chains.—Nicol's reef. A level crosscut has been surveyed 100 feet below. Winze sunk and abandoned on account of water. The distance to drive will be 287 feet. I look upon this development as of great importance to our company, as the reef in winze when abandoned assayed 5 dwts. to the ton. This said crosscut is just started and driven 13 feet. We are supplying the Success Company with mining timber, which will assist us slightly in developing our property. I hope with the present operations in progress to open up a good property.

SUCCESS GOLD MINES.—Coromandel, New Zealand, January 22: I beg to send the following monthly report of progress for the past month ending January 11. I should mention that in this month three days holidays bring development work below the average. Six men sunk the Big reef winze 8 feet. The air becoming too bad, and water too heavy, it has been abandoned. The total depth reached is 70 feet. The reef in the bottom is small and pinched, and underlayin. the part sunk on 3½ feet to the bottom. As soon as we come under the perpendicular we shall rise (say) 40 feet above our deep or Big reef crosscut to drain and ventilate this point. I trust we may start rising ere my next report. The Big reef crosscut has been worked by eight men, with six hours shifts, in order to force its development. 47 feet was driven for the month. To-day it measures 171 feet; the rock in all this drivage has been tight and hard—*i.e.*, in the Old Success. No. 3 level above the rock was similarly hard, but the Success reef yielded large quantities of gold therein. Since my last six men have enlarged James's crosscut for 180 feet for the month, and will be completed in another week, and will facilitate for better ventilation and dispatch of stuff as the ground will be considerably above this level to tram and tip through our big reef winze and thence through our deep level crosscut and wire tramway to battery. The men employed in widening this said crosscut were taken from Bennett's and James's reef west ends. James's west level was extended in line of reef 19½ feet through stiff clay and occasion boulders. A further drivage of 60 feet should haul this level to surface and open up thorough ventilation. James's east end was extended 18 feet by two men, the reef formation line has been unusually large composed of veins of quartz charged with oxide of iron and sandstone, at times yielding dish prospects of gold. We are at present driving in the centre, leaving a wall on both sides. James's intermediate level was driven by two men 15 feet. The main part of the reef here is carrying 6 inches of quartz, and at times will pan in the dish loose colours of gold, the reef at this point is letting out water freely. James No. 3 rise is up 28 feet above the intermediate, and about 60 feet from surface, at this point the reef carrying 9 inches of quartz and loose colours of gold. Two crosscuts have been driven north and south from Bennett's level, respectively 33 and 31 feet, to prove any reef in either direction. We have resumed the level easterly and driven 44 feet by four men. The contractors have commenced to clear the bush from and around machine site, preparing for erection of battery and machinery. By the time our battery is erected we shall have a fair section of ground for stoping, and I am in hopes of our deeper level opening up a rich mine.—(Signed) Francis Hodge.

THE BLACK HORSE AND SANDSTONE GOLD REEFS.—The following report of development in the Sandstone Mine, reached this company's London office from Melbourne, on the 9th instant:—I have the honour to submit my weekly report to you. I am pleased to inform you that the air has been good all through the mine all the week, and the mine is looking well all through.—No. 4 level, south drive. This end has greatly improved since Tuesday last; gold seen frequently in breaking, reef 4 feet wide, 8 feet driven.—No. 3 level, north drive. This end has also greatly improved the last day or two; gold seen in breaking; a new make of quartz coming up near the head or western wall; reef 5 feet wide. Good progress made in driving. Winze in south drive putting down on No. 4 level, down 14 feet; gold seen in washing, but think it is poor as yet; reef broken.—No. 2 level north drive, North end, width of reef not known, carrying the foot or eastern wall; when last cut put through reef; best quartz was on hanging wall. The drive is now carried the ordinary width on the footwall, that is for the convenience of stoping the ground when I have got the battery in full swing. Winze down 28 feet 6 inches; reef wide, carrying over 8 feet, but am now bringing in the hanging wall to make it narrower.—Princess Royal. Shaft men getting on well in dividing down; two shifts now employed, and three will be employed next week some time.—Whim. The contractors will finish erecting whim in a day or two from date. Mine workings below well secured. Machinery in good order and working well.—Battery. I must again call your attention to the battery, and I am not doing so without due consideration, and must urge you to hurry on, as if it is left until winter sets in it will cost you a lot more money, and if it it is now pushed on with I shall be ready for not 10 heads only, but I can say (and speak within bounds) four times ten; but I will be content with small things for a start, provided I am allowed to make provision for big things—that is, lay the foundation for them.—(Signed) Thos. L. Kitto, M.M.E., manager.—Note. The secretary states that cabled authority to erect the battery reached Melbourne about the time of despatch of the above report, and that crushing is expected to commence about the end of the present month.

WESTERN AUSTRALIAN DEVELOPMENT CORPORATION.—Coolgardie, January 28: Dorothy Gold Mine. Report of mine manager. Working shaft. East crosscut advanced to 41 feet from shaft, and cut what is supposed to be the eastern wall of lode. Colours of gold were obtained (the whole distance) by dish prospects. South drive in centre of lode advanced 31 feet from east crosscut. Gold obtained by dolly tests. North drive in centre of lode advanced to 46 feet from east crosscut. Lode stone showing fair gold by dish prospects. The lode stone in this drive has a very promising appearance. North drive on west wall of lode advanced 19 feet from shaft. In my opinion, the best stone is left on the west side of this drive. Have started to sink winze on the underlie from the bottom of vertical shaft. Gold showing freely in the lode stone, and heavily charged with iron pyrites. I have a good man now engaged sampling and testing the whole of this immense lode. Will cable if any important developments occur.

FOR CONTINUATION OF MINES SEE PAGE 344.

INDIAN MINES' OUTPUT FOR FEBRUARY.

DURING last month the output of the producing mines in Mysore, India, was 27,508 ounces, showing an *increase** of 5066 ounces as compared with the preceding month, and an *increase** of 8150 ounces as compared with the corresponding month of 1895. The production since the beginning of 1892 has been as follows:—

	1892. Ozs.	1893. Ozs.	1894. Ozs.	1895. Ozs.	1895. Ozs.
January ...	11,674	16,844	17,026	19,672	22,442
February ...	11,780	16,656	15,803	19,358	27.508
March	11,579	17,463	16,080	20,257	—
April.....	11,813	18,287	15,551	20,399	—
May	12,488	17,922	16,543	20,797	—
June.....	11,847	16,879	15,459	20,839	—
July	13,277	16,676	18,271	19,280	—
August.....	14.854	16,692	19,073	20,704	—
September	5,529	17,060	18,911	21,502	—
October ...	15,922	17,440	19,119	22,301	—
November	15,942	17,557	18,825	22,545	—
December	16,435	17,659	19,068	22,652	—
Total ...	163,140	207,135	209,729	250,306	—

* The increase is chiefly due to the addition of a reserve or part of a reserve of gold to the outputs of the Mysore and Nundydroog mines.

The outputs of the individual mines for the past six months have been:—

	Sept. Ozs.	Oct. Ozs.	Nov. Ozs.	Dec. Ozs.	Jan. Ozs.	Feb. Ozs.
Ooregum	6,028	6,036	6,045	6,207	6,180	6,170
Mysore	5,563	5,699	6,029	6,123	6,349	10,145†
Champion Reef	6,101	6,204	6,228	6,237	6,291	6,304
Nundydroog...	3,286	3,295	3,315	3,321	3,323	3,781‡
Nine Reefs ...	—	—	—	110	—	—
Mysore Reefs	100	116	222	116	179	153
Mysore W. and Wynaad ...	424	951	706	538	—	654
Balaghat Mysore	—	—	—	—	120	211

† Of this 2850 ounces are the January balance.
‡ 250 ounces from the previous clean up is being forwarded.

INSTITUTION OF MINING AND METALLURGY.—The fifth annual general meeting of the fifth session will be held next Wednesday evening in the Lecture Theatre of the Geological Museum, Jermyn-street, S.W., at 8 o'clock.—Agenda: 1. To read and confirm minutes of previous meeting.—2. To receive the report of the council, and the statement of accounts for the year ended February 29.—3. To announce the result of elections to the council.—4. To receive the Presidential address.—5. To transact any other business.

WE are informed that Mr. Gray, the engineer of the Gresham Gold Exploring Syndicate, has arrived at Freemantle, on his way back to the gold fields.

COMPANY FINANCE.

Reports, Balance Sheets, Dividends, &c., of Mining and other Companies.

KAPANGA GOLD MINE.

The report of the Kapanga Gold Mining Company (Limited) for the year ending September 30, to be presented at the annual general meeting to be held in London on Tuesday next, states that the use of the diamond drill in boring below the 800 feet level was so satisfactory as showing a marked improvement in the nature of the ground, the auriferous character of which gave confidence to the directors, that they decided upon resuming the sinking of the shaft forthwith, and the same has now reached a depth of 906 feet. The sinking will be steadily continued until a depth of 1000 feet has been attained. Very extensive operations have been commenced in other parts of the property, notably at Corby's shaft, which is down 200 feet, and where machinery has been erected, which will aid in the thorough development of this part of the mine. The directors have much pleasure in expressing their opinion that ere long very satisfactory results will accrue from the various workings now in course of operation. The shares in the Hauraki Gold Mining Company (Limited) held by the company have now been dealt with, 50,000 having been divided amongst the shareholders, while the profit arising from the sale of the remainder has been duly entered to the credit of the revenue account. The company retain 100,000 fully paid shares in the Blagrove's Freehold Gold Mining Company (Limited), which they propose to deal with as opportunity may arise. All arrangements having been made, the colonial register will be opened in due course.

MONTANA MINING COMPANY (LIMITED).

The directors have declared a dividend of 3d. per share, free of income tax, payable on April 15. The transfer books of the company will be closed from the 18th to the 23rd inst., both days inclusive.

LONDON AND SOUTH AFRICAN EXPLORATION COMPANY (LIMITED).

The directors of this company have declared a dividend of 4s. per share, less income tax, for the quarter ending the 31st inst., payable on and after that date.

CHALLENGE GOLD ESTATES PROPRIETARY COMPANY (W.A.), LIMITED.

The statutory meeting of the shareholders in the Challenge Gold Estates Proprietary Company (W.A.), Limited, was held at the Great Eastern Hotel, E.C., on Thursday, when Mr. J. L. Strain, who presided, said the eight leases held by the board were 114 acres in extent. They had appointed Messrs. John Taylor and Sons as their consulting engineers. The appointment of a manager was still under consideration, and, in the meantime, three of the leases were being worked with encouraging results. In regard to the Thistle block some rich ore had been struck at 80 feet, giving 13 ounces of gold to the ton. A special feature of the Niagara district, in which all their properties were situate, was that the water supply was a good one. From the latest reports received as to the working of the claims, the directors were highly pleased with the progress made, while a cablegram, dated March 6, stated "the latest developments on the Lady Betty show good gold at a depth of 88 feet. On the Iolanthe excellent gold is shown at a depth of 60 feet. A new main shaft is being sunk on the Shamrock and Thistle. We have cut the Port Pirie reef in the Port Pirie East at a depth of 120 feet; the reef is 4 feet in width. There are strong indications that water will be struck shortly. Water is plentiful generally, owing to heavy rains." At present, the Chairman added, they were in that period when the hard and tedious work of opening up the mines and developing their property was being done, but he thoroughly believed that the expectations held out would be fully realised.—A vote of thanks to the Chairman terminated the proceedings.

— The directors of the WHITEHEAD AND SULTAN GOLD MINES (LIMITED) have decided to postpone the date of payment of the final call of 5s. due March 31, until the 31st day of July next, of which due notice will be sent to the shareholders.

— The certificates for shares of the UNITED AFRICAN COLLIERIES (LIMITED) are now ready, and will be exchanged at the offices of the company for the receipts for payment on application and allotment, together with the letter of allotment.

— The CITY OF LONDON GOLD MINES share certificates are now ready for shares in this company in exchange for bankers' receipts for payments made.

— The AFRICAN AND COLONIAL COMPANY has opened offices at 15 and 16, George-street, Mansion House, E.C.

— CAPTAIN ROBINSON'S GOLD REEFS (LIMITED) have opened offices at 15 and 16, George-street, Mansion House, E.C.

— The registered offices of the BRITISH WESTRALIA SYNDICATE (LIMITED), the GREAT BOULDER PERSEVERANCE GOLD MINING COMPANY (LIMITED), and the GREAT BOULDER SOUTH GOLD MINING COMPANY (LIMITED) have been removed to 32, Old Jewry, and not 33, as previously announced.

— Letters of allotment and regret in the 90 MILE PROPRIETARY GOLD MINES (LIMITED) have been posted.

— The dividend warrants have been posted to shareholders in the LANGLAAGTE ESTATE AND GOLD MINING COMPANY (LIMITED), for payment of the dividend of 25 per cent., amounting to 5s. per share for the half-year ending December 31. Holders of share warrants to bearer must lodge coupon No. 7 at the offices of the Robinson South African Banking Company (Limited), 1, Bank Buildings, Lothbury, E.C., or with the Paris Agency, 56, Rue de Provence. Coupons must be left three clear days for examination.

— Mr. Lewis Peter Ford, of Shortlands House, Shortlands, Kent, who was for several years a resident at Johannesburg, has joined the board of directors of the PIGG'S PEAK DEVELOPMENT COMPANY (LIMITED).

— Mr. Lewis Peter Ford, of Shortlands House, Shortlands, Kent, and for several years a resident of Johannesburg, has joined the board of directors of the PIGG'S PEAK DEVELOPMENT COMPANY (LIMITED).

— The secretary of the ISLE OF MAN MINING COMPANY (LIMITED) sold on March 7, 100 tons of this company's ore at £9 4s. 3d. per ton.

— The result of the operations of the MOUNT CARBON COMPANY (LIMITED) during February was a profit of $1740.

— The BALAGHAT MYSORE MINES (LIMITED) has sold the gold obtained during the month of January last, which realised £431 17s. 9d.

— The MYSORE GOLD MINING COMPANY (LIMITED) has sold the gold obtained during the month of January last, which realised £24,765 2s. 5d.

— The NUNDYDROOG COMPANY (LIMITED) has sold the gold obtained during the month of January last, which realised £12,430 3s. 5d.

— The CHAMPION REEF GOLD MINING COMPANY OF INDIA (LIMITED) have sold the gold produced in January for £24,030 15s. 5d.

— A cablegram received by the BROKEN HILL PROPRIETARY COMPANY (LIMITED) announces that at Melbourne the shares are finding buyers at £2 8s. 6d.

— The gold obtained at the mine belonging to the OOREGUM GOLD MINING COMPANY OF INDIA (LIMITED) has been sold for £23,124 5s. 1d.

— The following cablegram has been received from the head office in Charters Towers:—"The BRILLIANT CENTRAL GOLD MINING COMPANY (NO LIABILITY) have made a call of 3d. per share, payable in Charters Towers on May 5 next. Forfeiture for non-payment 26 clear days after pay date in accordance with provisions of the No Liability clauses of the Companies Act. In terms of the foregoing, all shares upon which the said call shall not have been paid on or before May 31 next will be forfeited."

NOTES ON GOLD MILLING IN CALIFORNIA.

By ED. B. PRESTON, M.E.

Bulletin No. 6, issued by the California State Mining Bureau

(*Continued from page* 298.)

The Screen Frame.—It is made from strips of sugar pine 1½ inch by 3 inches broad, mortised, and reversible; usually they are made to close the entire discharge opening, grooves being cast on the exterior of the mortar for their reception. It is frequently strengthened with one or more vertical ribs across the centre opening, and is faced with iron plate on those portions of the side and bottom that come in contact with the iron keys that hold the frame solid against the mortar. In some mills the frame is made several inches lower than the opening, to permit the millmen to observe the interior of the mortar while in action, and to allow the hand to be introduced to remove any chips that may have passed in with the ore, as these have a tendency to bank up against the screen and interfere with the discharge of the pulp. Where such a screen frame is used the opening above is kept covered with a strip of canvas tacked to a wooden rod, laid on the upper projecting lid, while the loose end of the canvas hangs against the inside of the upper part of the screen frame.

The Plate Block (*Chock Block*) consists of wooden blocks bolted solidly together, and fitted and keyed to the lower edge of the mortar along the discharge opening, with one part projecting above the other, forming a recess on top to contain the screen frame, and lined with a piece of blanket to make a close joint. The inner side is sloped or rounded off, and fitted with an amalgamated plate. The front and ends are faced with iron plate to protect the wood. Two or more sets of these chock blocks should be provided, of which one stands 2 inches higher than the other; they are then used alternately, the higher one with new shoes and dies, to be replaced by the lower one when the dies are worn down somewhat, to retain a more even discharge than would otherwise be possible.

The Drop is the height through which the stamp is raised by the cam, through which it drops when released. Usually it is the same for all the stamps in a battery, although the end and feed stamps sometimes receive a different drop. It is regulated through the raising or lowering of the tappet, and depends mostly on the hardness of the rock. It is one of the factors in determining the speed with which the blows from the stamp shall be repeated. The usual combination of the two in the California mills is a low drop with rapid motion.

The Discharge is the distance between the top of the die when in place in the mortar, and the lower edge of the screen through which the pulp discharges. It is one of the most important factors in the duty of the stamps and the gold output from the ore. It should be maintained as nearly as possible at an even height through the entire period of crushing; the height of the chock block or screen frame being lowered to correspond with the wear of the die. A further means used to retain an even discharge is by placing a 2 inch iron plate under the dies, when worn thin. The discharge stands in a certain relationship with the fineness of the screen; low discharge goes with coarser crushing, a high discharge with the opposite. The discharge varies in California from 4 inches to 10 inches.

Water Supply.—Water pipes of 3 inch diameter are brought along the front of the mortar near the upper edge, with branch pipes 1 inch in diameter, supplied with faucets leading to the feed side of the mortar, to convey the battery water in at the back, or through the plank covering on the top; this water is under moderate pressure. A second discharge pipe is carried down in front to the lower lip of the mortar, where a movable perforated branch is turned across the front of the screen, discharging along the entire line on the lip; this second discharge pipe also supplies a hose. The battery water should enter both sides of the mortar in an even quantity, and the total amount must be sufficient to keep a fairly thick pulp that discharges freely through the screen. About 120 cubic feet of water per ton of crushed ore may be considered an average, or 8 to 10 cubic feet per stamp per hour.

Aprons and Apron Plates.—The apron is a low table placed in front of the mortar, just below and in immediate proximity to the lower lip of the discharge, for the reception of amalgamated copper plates. It is set on a sufficient grade to permit the discharging pulp to flow over it in an even stream, while affording the suspended amalgam an opportunity to reach and adhere to the plate surface. The size, shape, and slope are at the will of the millman; but usually they are rectangular, with the plates screwed down to the table with copper screws, perfectly level and smooth, the sides being secured with wooden cleats. The grade given varies from ¼ inch to 2½ inches to the foot, and the width of the apron is usually the width of the discharge opening of the mortar. In some mills several of these apron-plates are placed consecutively, discharging from one to the other. They are usually rigid, but in some instances the apron next to the mortar stands on rollers, permitting it to be rolled back, and thus giving freer access to the front of the mortar. They should not be attached to the battery frame.

Sluices and Sluice Plates.—These vary from 12 to 20 inches in width, and are placed below the aprons; they are usually set to a grade different from that of the apron. The plates can be fastened by cleats, or are laid overlapping at the ends, and, if not wider than 16 inches, do not need to be fastened down with side cleats; this permits of their being picked up and cleaned at any time without stopping the battery. The sluices are rarely over 16 feet long—more frequently in lengths of 8 feet, and should always be placed double. The width and grade as compared with the apron areas are mostly faulty in California mills.

Clean-up Barrel.—Large mills are supplied with clean-up barrels, which consist of iron barrels supported by trunnions resting in bearings on short standards. One of the trunnions is extended to carry a loose and tight pulley, by means of which it is revolved. A manhole, with a tight-fitting cover, is provided for charging and discharging, and below it is a sluice with cross riffles to receive the pulp when discharged from the barrel. The barrel should make from 30 to 40 revolutions a minute, requiring 2½ horse power. It is used to treat the battery sands when cleaning up the mill; also, all the scrapings from mill floors, as well as dirt from the drop boxes and amalgam traps, large pieces of quartz or pieces of broken shoes being added with water and quicksilver to assist in the operation.

Clean-up Pan.—This is a small amalgamating pan, 3 feet to 4 feet in diameter, operating with mullers with wooden shoes, and is run at a speed of 30 revolutions, requiring 1½ horse power. When in use the pan is half filled with water, and the amalgam put in, with an addition of clean quicksilver, and, if required, also some lye. After sufficient grinding, the muddy water is run out through plug holes, the mullers stopped and the contents drawn off in buckets. The iron found floating on top of the quicksilver is removed with a magnet; the sand is washed off with a small stream of clear water, and if any dross be found covering the surface it is skimmed off with a sponge or piece of blanket.

Cleaning-up Room.—This is an apartment in close proximity to the batteries and aprons, provided with a tight floor, and with a door under lock and key; the floor is best when laid in cement to avoid all losses from split quicksilver or amalgam. It should be well lighted, and furnished with a sloping table large enough to place a screen frame on; also with one or two water-tight boxes about 4 feet long, 3 feet wide, and 3 feet deep, for panning-out purposes. These are supplied with plug holes near the bottom to drain off the water, besides water pipes and fittings to fill the boxes when required. One or two wide shelves should be provided to hold the chemicals, quicksilver, and utensils needed in cleaning up. The latter consist of pans, wedgewood mortar, brushes, scoops, cups, knives, chisels, rubbers, scrapers, and a supply of closely-woven drilling or light canvas; the latter is used to squeeze the superfluous quicksilver from the amalgam. A good pair of balances, with a set of accurate weights, capable of weighing the amalgam and the retorted bullion, should also be provided. The table should be made of a solid plank, or a slab of slate or marble supplied with a raised edge, and grooved around to drain into a pan placed on a shelf attached below the lower end; some tables are covered with an amalgamated plate. It is sometimes convenient to have a small safe in the clean-up room, but it is always better to have the amalgam delivered to the office.

(*To be continued.*)

IMPROVEMENTS IN THE PREPARATION OF BASIC SLAG FOR FERTILISING PURPOSES.—A patent has recently been taken out with this object. The efficiency of Thomas or basic slag is rendered greater by the addition of blast furnace or cupola slags. The latter being acid slags, rich in silicic acid and lime, render the phosphoric acid in the Bessemer or basic Siemens' slag available and more easily assimilated. The proportions vary according to the strength of both slags, but, as a rule, equal proportions give satisfactory results.

A NEW RIVER PAPER.—We have received with pleasure the courtesy of an early copy of a new paper, entitled *The River*, which, as its name implies, is to be devoted to the interests of the River Thames. During the summer months the river fills so large a space in London life, and is so valued, and, withal, so charming a factor in the pleasures which make the Dog Days endurable, that a thoroughly representative journal, brought fully into contact with the feeling and movements of riparian society, is not likely to appeal in vain for general support, and all the qualities likely to ensure success for a paper of this kind are before us in the attractive advance copy of *The River*. City men who seek relaxation from business cares in the beautiful reaches of the Upper Thames—of whom there are many—will be glad to hear that the journal is under the able and spirited management of Mr. Frederick Bingham, whose life-long association with the river, no less than his sprightly and amiable style of writing, peculiarly fits him for the task he has undertaken. We cordially wish long life and every success to *The River*.

THE directors of Colenbrander's Matabeleland Development Company (Limited) have engaged Mr. J. C. E. Lawson as mining engineer. Mr. Lawson sails for Buluwayo on the 14th inst. by s.s. *Mexican*.

TIN TICKETING.

THE fortnightly ticketing for tin ores was held at Tabb's Hotel, Redruth, on Tuesday. Result:—

VALUES OF ORES SOLD FROM EACH MINE.

Mines	Tons	cwts.	Per ton. £	s.	d.	Value. £	s.	d.
Dolcoath No. 1	14	0	37	5	0	521	10	0
do No. 1a	14	0	37	5	0	521	10	0
do No. 1b	12	0	37	5	0	447	0	0
Wheal Grenville A	19	0	38	15	0	736	5	0
do B	14	0	38	5	0	535	10	0
East Pool A	13	0	29	5	0	380	5	0
do B	13	0	29	10	0	383	10	0
do No 2	1	5	11	12	6	17	8	9
Basset (Limited) No. 1	10	0	38	17	6	388	15	0
do No. 1a	10	0	39	2	6	391	5	0
do No. 2	4	0	27	15	0	111	0	0
Tincroft No. 1	10	0	33	12	6	336	5	0
do No. 2	10	0	33	0	0	330	0	0
Carn Brea No. 1	10	0	31	5	0	312	10	0
do No. 1a	9	0	31	12	6	284	12	6
do No. 2	1	0	21	10	0	21	10	0
West Kitty	13	0	38	7	6	498	17	6
Killifreth	12	0	37	5	0	447	0	0
West Frances	9	0	35	7	6	318	7	6
Phœnix United No. 1	8	0	38	2	6	305	0	0
do No. 2	1	0	31	2	6	31	2	6
South Condurrow	6	0	38	15	0	232	10	0
Wheal Kitty	5	0	37	5	0	186	5	0
	218	5				£7737	18	9

AVERAGE PRICE PER TON, £35 5s. 10d.

AVERAGE PRICES PER TON.

January 14	£34 15 11	February 25	£35 15 1
January 28	34 2 9	March 10	35 5 10
February 11	35 11 11		

DIARY.

Monday, March 16.

Thistle Reef Gold Mining Co. (Ltd.), Cannon-st. Hot., 11.30.
Transvaal Gold Exploration Land Co., Cannon-st. Hot., 12
Heidelburg Proprietary Mining Co., 5, Throg.-avenue, 2.30.

Tuesday, March 17.

Julia-Taltal Nitrate Co., Cannon-street Hotel, 11.30.
Kapanga Gold Mining Company, Winchester House, 12
Chiapas Mining Company, Winchester House, 12.30.
Paper on Coolgardie, by Dr. Chewings, Royal Col.Inst., 4.30.

Wednesday, March 18.

Luipaard's Vlei Estate, Cannon-street Hotel, 2.30.
Crown Deep, Johannesburg.
Geldenhuis Deep, Johannesburg.
Rose Deep, Johannesburg.

Thursday, March 19.

Lancaster Gold Mining Company, Johannesburg.
Rand Mines, Johannesburg.

Friday, March 20.

United Mexican Mines, Winchester House, 11.30.
Koffyfontein Mines, Winchester House, 3.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

BLOCK B LANGLAAGTE ESTATE.—Production for February (by cable):—"Mill. Ore crushed, 6697 tons of 2000 lbs.; gold retorted, 2001 ounces.—Tailings (cyanide process). Tons treated, 2580 tons of 2000 lbs.; gold recovered, 309 ounces.—Concentrates (cyanide process). Tons treated, 176 tons of 2000 lbs.; gold recovered, 311 ounces. Total gold recovered, 2621 ounces."

BURMA RUBY MINES.—The result of the mining for the month of February was 22,000 loads washed, producing rubies valued at 32,000 rupees.

BIG BLOW.—The following cable has been received from Mr. W. M. Vivian, the manager:—"Shall commence crushing ore March 13; water decreasing daily."

BLACK REEF PROPRIETARY.—The following cablegram has been received from the head office, Johannesburg:—"Sinking the shaft, quartzite formation; have cut a vein, assays 4 dwts. per ton; it is not of any importance; have resumed sinking; expect to strike a reef.—Spencer."

BUFFELSDOORN ESTATE.—The Johannesburg Consolidated Investment Company, London agents of the above company, announce receipt of the following cable:—"Production for February, 2539 ounces; 80 stamps, 24 days."

CAYLLOMA SILVER.—A cable has been received from the manager reporting February production:—"7500 ounces fine silver in export ores, and 8500 ounces fine silver in bullion."

COLOMBIAN HYDRAULIC.—The following cablegram of the result of run No. 206 has been received from the mine:—"We have cleaned up after a run of 75 days, during which time we have washed 1100 tons. The gross returns are £1750. The net profit is £520."

CRESCENT.—A cablegram from the superintendent, dated March 9, states that he expects to start the mill about the first week in April.

CROWN REEF.—Results for February, received by cablegram from Johannesburg:—"Number of days working 120 stamp mill, 27 days 15 hours; crushed by 120 stamp mill, 16,377 tons; yield in smelted gold from 120 stamp mill, 6357 ounces; yield in smelted gold from 120 stamp cyanide works, 4488 ounces, 10,845 ounces.—Working expenditure and revenue: 120 stamp mill and cyanide works, 16,377 tons milled. To mining, transport, milling, cyanide, general charges, maintenance, and mine development, £21,512; to profit for month, £14,707; total, £36,219. By gold account, 6357 ounces from 120 stamp mill, £22,113; by 4488 ounces from 120 stamp cyanide works, £14,106; £36,219; revenue per ton crushed, £2 4s. 2·78d.; cost, £1 6s. 3·25d.; profit, 17s. 11·53d."

DAY DAWN BLOCK AND WYNDHAM.—Cablegram from the general manager at Charters Towers gives the result of the crushing for the fortnight ending the 7th instant:—"Tons crushed, 1020; yield of gold, 1160 ounces; approximate value, £4000; fortnight's expenses, £1890."

DE LAMAR.—The following is the cabled return for the month of February:—"Crushed during the month, 3700 tons; bullion produced in the mill, $55,225; estimated value of ore shipped to smelters, $7000; miscellaneous revenue, $565; total produce, $62,790; total expenses, $37,330; profit for the month of February, $25,460; or at $4·90 to £ sterling, £5196."

DORIC.—The following is an extract from a cablegram received from the company's manager at the mines:—"Have struck footwall of lode; lode is probably 100 feet wide; ore assays 1 ounce 2 dwts. gold and 29 ounces 10 dwts. silver per ton of 2000 lbs."

FERREIRA.—Copy of cablegram received from Johannesburg, March 9. Results for February:—"Tons crushed, 9419 tons; bar gold extracted, 8012 ounces; concentrates caught, 230 tons; assay value of concentrates, 7 ounces fine gold per ton, equal to (say) 1610 ounces.—Cyanide works: Bullion produced from tailings, 2148 ounces; total gold from all sources, 11,770 ounces."

GELDENHUIS MAIN REEF.—Result of February crushing: 2883 tons crushed, yielding 1319 ounces of gold; 1740 tons treated by cyanide, yielding 557 ounces of gold; total, 1876 ounces of gold; profit for the month, £2662.

GELDENHUIS ESTATE.—Results for February: A cablegram has been received from the head office, Johannesburg, stating the following results for last month:—"Crushed 13,280 tons; crushed from mill, 4002 ounces of gold; crushed from concentrates by cyanide, 366 ounces of gold; crushed from tailings by cyanide, 1447 ounces of gold. Total, 5815 ounces of gold."—Reading: "Last months's (February) profit was £4400."

GELDENHUIS DEEP.—The following has been received from Mr. H. C. Perkins, manager of the mines:—"The mill has run 18½ days; crushed 5800 tons from mine, 2922 tons from development dump, yielding 1126 ounces; cyanide treated 6250 tons, yielding 1667 ounces; total, 2793 ounces."

GINSBERG GOLD.—The London agents announce receipt of the following cable:—"Production for February, 910 ounces; 10 stamps, 27 days."

GLENCAIRN MAIN REEF.—The Johannesburg Consolidated Investment Company, London agents of the above company, announce receipt of the following cable:—"Production for February, 4401 ounces. Profit, £5769. 100 stamps, 24 days." It will be observed that this is a considerable improvement on the previous month.

GOLCONDA.—The manager cables:—"We have cleaned up after a run of 410 hours, crushing 365 tons, which yielded 656 ounces. An average sample of the tailings assayed 9 dwts."

GRASKOP.—The returns for February were as follows:—403 tons crushed for 201 ounces.

HARMONY GOLD AND LAND.—The following cable has just been received from the general manager at Pietersburg:—"The railway from Pretoria to Pietersburg will be commenced next week."

HARQUAHALA.—The following information has been received by cablegram from Mr. Raymond (Kalgoorlie, W.A.):—"Reef not visible at surface, visible at the bottom of Dodd's shaft. Composed of quartz and talc schists. Reef 8 feet wide, and assays 4 dwts. per ton. Dips at an angle of 70° to the east, crosscut Dodd's to Grenfell's; no regular vein, only stringers running towards the reef. Assays trace to 6 dwts. per ton. Small stringers near reef 20 dwts. per ton. A small but well-defined vein, 6 inches near the east boundary, dipping to the west, 30 dwts. per ton. With these exceptions no pay ore found yet. Probable continuation south of Hannan's Reward, but prospects are discouraging at this place. Further development necessary. Shall drive a crosscut from the 125 feet level and 225 to prove the vein depth. Orebodies likely to occur elsewhere along the course of the vein. Main shaft is down 175 feet."

HANNAN'S REWARD.—In reply to an inquiry from the board, the following cable has been received from the manager:—"Will use dry crushing."

JOKER (Yalgoo).—A cable has been received stating that the leases have been transferred into the name of the company's representative at Perth.

JUMPERS.—Results for February. A cablegram has been received from the head office at Johannesburg stating the following results for last month:—"Crushed, 5121 tons; obtained from mill, 2453 ounces of gold; from concentrates, equal to 500 ounces of gold; from tailings by cyanide, 364 ounces of gold; total, 3317 ounces of gold; profit for month, £2000. The mill ran 16 days."

JUBILEE.—Cable dated March 10:—"Gold won, 1998 ounces; tons crushed, 5950; tailings, 474."

KABOONGA.—Cablegram from the mine:—"Water through the gravel has been more or less troublesome, causing frequent stoppages, indicates improvement; putting up another rise, which will prevent further trouble. Washing unavoidably delayed. Main drive is now in 332 feet."

LADY EVELYN.—The following cabled report has been received from the consulting engineer at the mines (Mr. J. Wilson Archibald):—"Evelyn in new shaft 300 feet south from deep shaft struck a rich body of ore at 15 feet, showing coarse gold. The width of the reef is 3 feet. Average value 20 ounces of gold per ton; this is very important development. Advise acquire 6 acres vacant on east."

LOMA.—The mine superintendent reports having made a clean up at the mines of $1700 (gold).

MAY CONSOLIDATED.—The following cable message, dated Johannesburg, March 10, has been received:—"The yield of gold during the past month (February) was 2529 ounces from 9000 tons crushed. Mill running 20 days. Cyanide, 708 ounces from 3960 tons. Total for month, 3237 ounces. Last month's output attributed to alteration of 50 stamps, and a break in the tailing pumps."

MENZIES PIONEERS.—The following cable dated 9th inst. has been received from the mine manager:—"Pioneer group, March 5, sinking and driving progress 21 (feet), total 486. Underlie shaft, south drift, 45 feet level, 43 feet. The vein is 1 foot, 11 dwts. per ton. North drift, 45 feet level, 15 feet. The vein is 3 feet 6 inches, 1 ounce per ton."

MEYER AND CHARLTON.—Result of working for February:—"6663 tons; gold won, 2219 ounces; extracted from tailings, 789 ounces; total, 3008 ounces; profit, £2430."

MOANATAIRI.—Coopers' Australasian Exploring Company (Limited) have received the following cablegram:—"Auckland, N.Z.: Last month's return, £830; 480 tons; developments opening up splendidly."

MOUNT MORGAN (Queensland).—Results for the month of February:—Tons chlorinated, 6712; gold returned, 12,050 ounces.

NEW COMET.—The Anglo-French Exploration Company (Limited), as London agents for the New Comet Gold Mining Company (Limited), have received a cable from Johannesburg to the effect that the crushing for last month with their 40-stamp mill was as follows:—"4024 tons milled; obtained from the plates, 1448 ounces; 2563 tons treated by cyanide yielded 537 ounces; making a total of 1985 ounces, as compared with January, which was as follows:—2961 tons milled; gold won 613 ounces; 2180 tons treated by cyanide yielding 736 ounces; making a total of 1349 ounces. During the month of January the mill ran 18 days 11 hours."

NEW CHIMES (Bendigo).—The company's local manager, Mr. L. A. Samuels, cables as follow:—"Prospects of mine are very favourable; water has been struck in large quantities, the influx of which has retarded work. Have cut the reef in bottom level (552 feet) which carries visible gold. It is advisable to sink main shaft a few feet further. The prospect is very encouraging at this point."

NEW CHIMES.—Returns for January:—40 stamps ran for 14 20-31 days, crushing 2278 tons of ore, yielding 665·11 ounces gold; 1080 tons tailings yielded 141·13 ounces gold.

NEW CRŒSUS.—Production for February (60 stamps, 23 days), 3058 ounces.

NEW HERIOT.—Last month's crushing yielded 5716 ounces.

NEW KLEINFONTEIN.—The Anglo-French Exploration Company (Limited), as London agents of the New Kleinfontein Company (Limited), have received the following information by cablegram from Johannesburg:—"The result of the crushing for the month of February was as follows: From the mill, 1910 ounces; from the treatment of tailings, 398 ounces; making a total of 2308 ounces, as compared with last month, 1326 ounces. The number of tons developed was 4200 tons, as compared with January, 4270 tons."

NEW PRIMROSE.—The Johannesburg Consolidated Investment Company, the London agents of the above company, announce receipt of the following cable:—"Production for February, 9101 ounces. Profit, £6552; 160 stamps, 27 days."

NEW QUEEN.—Cablegram, dated Charters Towers, March 10 states:—"Have shipped per *Jumna* 737 ounces gold."

NIGEL.—Last month's crushing yielded: Battery, 1217 ounces; cyanide, 862 ounces; total, 2079 ounces.

PERMANENT NITRATE.—Telegram from Iquique announces the completion of the nitrate combination. This combination will date from April 1, and embrace a minimum period of three years, the object being to regulate the production of nitrate of soda and to adjust the shipments as to the requirements of consumption.

PIGG'S PEAK DEVELOPMENT.—The following cablegram has come to hand:—"Emlimbo. During the month mill worked 23 days. Crushed 380 tons; yielded 66 ounces gold. Estimated to be worth £230." The foregoing does not refer to the 30 head mill at the Peak Mine, the first consignment of electrical plant for which arrived at Delagoa Bay early in February, and the final consignment will be shipped from Europe this week.

PORGES RANDFONTEIN.—Production for February:—By cable: "Mill. Stamps running, 40; ore crushed, 982 tons of 2000 lbs.; gold retorted, 830 ounces.—Tailings, cyanide process. Tons treated, 1008 tons of 2000 lbs.; gold recovered, 163 ounces.—Concentrates, cyanide process. Tons treated, 50 tons of 2000 lbs.; gold recovered, 136 ounces. Total gold recovered, 1129 ounces." The London agents have received advice that the mill has been temporarily shut down, owing to the scarcity of labour. The production of 1129 ounces for the month of February is the result of 13 days' crushing with 40 stamps, and from cyanide works.

QUEENSLAND SMELTING.—The manager cables having shipped by the steamship *Nairnshire* bullion to the value of £6600.

ROBINSON.—Production for February (by cable):—"Mill. 14,075 tons of ore crushed; yielded in smelted gold, 8867 ounces; from concentrates (by chlorination) 1038 ounces; from tailings (cyanide process), 1714 ounces; from own ore, 11,619 ounces; from concentrates bought (by chlorination), 1887 ounces; from slimes, 1317 ounces; total gold recovered, 14,823 ounces.

ROODEPOORT UNITED MAIN REEF.—Crushing for February: 6996 tons, produced 3002 ounces; cyanide produced 818 ounces; total, 3820 ounces; profit, £6000.

ROSE HILL UNITED.—Report for the week ending March 7—Lease 226, No. 4 shaft, 30 feet level drive extended 8 feet. Reef 2½ feet wide; quality fair. No. 2 shaft, crosscut 114 feet, driven 16 feet; expect strike rich lode met at 70 feet next week. Lease 1599, No. 2 shaft. Lode formation going down strongly, still improving; prospects good. Lease 603. Water shaft 125 (feet) deep. During week 7400 gallons were sold. Mine's accountant arrived.

SALISBURY.—Last month's crushing yielded 1950 ounces.

SAN SALVADOR SPANISH IRON ORE.—The steamship *Emerald* sailed from Santander on the 6th inst. with 1250 tons of this company's ore for Glasgow.

SIMMER AND JACK.—The following cable has been received from South Africa:—"Crushed 12,475 tons; obtained 5000 ounces of gold from mill; 632 ounces of gold by chlorination, and 2121 ounces of gold from tailings by cyanide during the month."

ST. JOHN DEL REY.—The following telegram has been received from Mr. Chalmers:—"Produce for month of February, 29,500 oits., equal to 3400·87 ounces troy; value, £11,431; yield per ton, 5·5 oits. (·63 ounces troy.)"

TALISMAN.—Cablegram from the company's representative at Perth:—"An entirely new chute of ore. Talisman West 3 feet. Prospects 5 ounces; has been traced 250 feet."

TRIUMPH (Hauraki).—Cablegram received from the company's manager in New Zealand:—"Am now placing battery ¼ mile from the Triumph Mine. The locality is excellent; there is plenty of wood and water. Mr. Argall strongly advised the site; letter sent explaining, dated February 19; plan and section will be sent as soon as possible." From this cablegram it is evident that all the machinery, including a 10 head stamp battery, has now arrived at the mines, and is in course of erection. The plan and section referred to is in connection with an overhead wire tramway, which it is proposed to construct from the mine to the battery site to convey the ore to the mill.

VAN RYN.—Production for month of February, by cable:—"Mill: Number of days working, 21; number of stamps working, 50; tons milled, 3323; number of ounces recovered, 1491.—Concentrates. Production for month in ounces, 30.—Cyanide works. Number of tons treated, 3600; number of ounces recovered, 560; total amount gold recovered, 2081 ounces."

VICTORIA GOLD MINING ASSOCIATION (Charter Towers).—The following cablegram has been received at the office:—"535 tons crushed, yielded 726 ounces gold."

WITWATERSRANDT GOLD (Knight's).—The London office is just advised by cable that the extraordinary general meeting of shareholders, called for March 12, has been postponed to March 19, owing to the want of a quorum.

WHITEHEAD AND SULTAN.—The latest cable advices from the mines report:—"South shaft reached a depth of 150 feet, and the north shaft a depth of 75 feet, both showing indications of improvement in depth. The reservoir now building has already a capacity of 185,000 gallons."

WOLHUTER.—February crushing, 9423 tons, produced 3334 ounces. Cyanide works, 1572 ounces.

REVIEWS.

Burdett's Official Intelligence for 1896. By Henry C. Burdett. (London: Spottiswoode and Co.)

This annual, which has long been regarded as the most comprehensive and authoritative published in the United Kingdom, has just reached us; and as it deals with matters of vital interest at the present moment, and gives the record of the past year, which in many respects has been a memorable one, it may be looked upon as more important, and more interesting, than former volumes. There are chapters on Sinking Funds of the National Debt, Light Railways, National Debts of the World, Indian and Colonial Municipal and County Finance, and British Railway Statistics. During the past year, as we well know, there has been a remarkable increase in the number of mining companies floated on the London market. These, of course, occupy a very considerable space in the annual, and will make the volume an extremely valuable one. There were no less than 3522 limited companies registered in this country, with an enormous capital of £203,473,603. In the Transvaal, it is believed that over 200 were registered, with an aggregate share capital of nearly £42,000,000. In consequence of this enormous increase, the volume is augmented by no less than 240 pages. At the present moment, the chapter which will probably attract great attention will be those on the Sinking Funds of the National Debt and Light Railways. By merely citing the contents of this annual, we, of course, indicate its scope, and our readers may easily gather from this—if by any conceivable chance they should happen to be unacquainted with this famous work—how extremely valuable it is, and that it is well worth the comparatively nominal sum at which it is published—viz., £2. 2s.

"HORNCASTLE'S MANUAL, 1896."

Mr. W. R. Horncastle has just issued the 1896 edition of his well-known and highly-useful manual, which is characterised by all the features which recommended previous issues to the favourable attention of that large section of business men more intimately connected with Limited Liability enterprises. The greater vigour and more spirited tone which has given the turn to company affairs during the past year—the principle marks of which, such as the West Australian boom and the sharp revival in South African affairs, are recent history, well within the recollection of our readers—has necessarily led to some remoulding of the style and method with which the matter is presented to the public in this manual; but such modifications as have been introduced partake wholly of the nature of improvements, and are an additional recommendation, where none was needed, to bring the present edition into enviable prominence. The past year has been very prolific in additions to the companies' lists, and it follows upon the complete and comprehensive system observed by Mr. Horncastle in this particular department of compilation that the average limits of the manual have been on this occasion a good deal exceeded. Prefacing the body of the work, as usual, is a budget of information concerning Stock Exchange and company practice, which can confidently be impressed upon the reader's attention as embodying many useful hints, that in the observance may be found to effect considerable saving both in time and money. Mr. Horncastle writes after a large and varied experience, and his injunction of *experto crede*, writ large upon the cover, is not likely to lack attention. It is impossible to close this short notice without a brief remark—which we hope in the future to extend—concerning Mr. Horncastle's seasonable and well-judged references to the "gutter Press"—a parasitical growth, which is no less a menace to the public interest than a scandal upon reputable journalism. It may be pointed out that Mr. Horncastle enjoys exceptional opportunities for observing this new fungoid phenomenon, and in exposing it to the general gaze he performs a useful service.

NEW MINERAL RAILWAY IN FIFESHIRE.—The Kirkcaldy and District Railway, opened for mineral traffic on Tuesday, marks the steady development of the Fife coal fields. The new line commences at Invertiel Junction, near Kirkcaldy, branching off the main line there, and traversing a district of 6 miles, embracing Auchtertool and other villages, and finally connecting with the Dunfermline line at the Foulford Junction, Cowdenbeath. The district passed through is rich in mineral, and the line is to be used principally in connection with the coal traffic from the Raith sidings, the bulk of which traffic will, of course, be carried on to Burntisland Dock.

L. LE PERSONNE & CO., London, E.C.
Telegraphic Address: "Lepersonne, London." Telephone, No. 15,144.
IRON, METAL, and MINERAL MERCHANTS and BROKERS.
(Zinc, Lead, Silver Lead, and Copper Ores' offers specially invited.)

C. PASS & SON (Limited), BRISTOL,
ARE BUYERS OF
LEAD ASHES, SULPHATE OF LEAD, LEAD SLAGS,
ANTIMONIAL LEAD, COPPER MATTE, TIN ASHES, &c.
and DROSS or ORES containing
TIN, COPPER, LEAD, AND ANTIMONY.

LAMBERT'S WHARFAGE CO.,
PRINCE OF WALES DOCK, SWANSEA.
Ores, Mattes Regulus, and Bars received and prepared for market.
Copper, Lead, Tin, Spelter, and Pig Iron Received, Weighed, and Sampled, and Warrants issued against same.
N.B.—Warrants are on Accepted List of London Metal Exchange.
Regular lines of steamers from America, Europe, &c.
Good prices can be obtained for low produce Copper Ores. Send fair samples of not less than half a pound.

THE AUSTRALIAN GOLD RECOVERY COMPANY (Limited).
(MACARTHUR-FORREST PROCESS).

All information and terms regarding Plants and the Licensing of this Process can be obtained on application to:
THE AUSTRALIAN GOLD RECOVERY CO. (Ld.), 23, College Hill, London, E.C.
JAMES R. FOWLER, ESQ., 14, King William Street Adelaide; or
GORDON WILSON, ESQ., The Australian Gold Recovery Company (Limited), Charters Towers, North Queensland.

AGENTS FOR THE CASSEL GOLD EXTRACTING COMPANY'S MANUFACTURES OF HIGH GRADE CYANIDE.

THE BUTE WORKS SUPPLY COMPANY,
133M, BUTE DOCKS, CARDIFF.
Telephone: No. 45 (Post Office and National).
Telegrams: Gething, Cardiff.
RAILS.—Bridge, Flange, Double Head, and Bull Head, with or without fastenings.
SLEEPERS.—Wood and Steel for all gauges.
EARTH WAGONS.—30-inch gauge, end and or side tipping, £5 each, at Cardiff.
PORTABLE RAILWAY.—£11 per 100 yards of railway 30 inch gauge, and £30 per 100 yards of railway 39⅜ inch (1-metre) gauge, both complete and ready for laying.
RAILWAY COAL WAGONS.—(New and Second-hand) For Cash, Redemption Hire or Simple Hire. Quick delivery can be made of perfectly new, and almost new latest regulations.
LOCOMOTIVES.—Six wheels coupled, by Manning, Wardle, and Co., 12 inches by 17 inches, now at Cardiff; also six wheels coupled, by Avonside Engine Company, 14 inches by 20 inches, now at Cardiff; also six wheels coupled, by Sharp, Stewart, and Co., 17 inches by 24 inches, now near Cardiff; all recently thoroughly overhauled, and ready for instant work; cheap for cash, or three years' redemption purchase.
Full particulars on application.

COMPANIES AND LEGAL ANNOUNCEMENTS.

*** Advertisements are inserted in this column at the rate of 9d. per line, with a minimum charge of 7s. 6d.

THE MYSORE GOLD MINING COMPANY (LIMITED).

NOTICE IS HEREBY GIVEN, that the TRANSFER BOOKS of the above Company will be closed from the 11th inst. to the 24th inst., both days inclusive.

By Order of the Board,
I. CROCKER,
Secretary.

Registered Offices:
6 and 7, Queen Street Place,
London, E.C.,
March 9, 1896.

TENDERS FOR TUNNELLING.

THE BASSET MINES (LIMITED) are PREPARED to RECEIVE TENDERS for DRIVING 2000 FATHOMS of TUNNELS, not less than 6 feet wide by 8 feet high, by rock drills, the mines providing always two or more tunnels for that purpose.

The tenders to supply and work all machinery required, excepting air pipes, and to deliver the rock in wagons (which the mines will supply) to sidings within 200 yards of the tunnel end.

A premium would be entertained for speed in driving, and tenders must state what is the minimum speed they will guarantee per month in each tunnel driven.

In case the machinery employed by the contractor be of an approved character, the Company would either take the machinery over at the end of the contract, or pay the contractor a sum of £500 forfeit.

Ten per cent. of the contract price to be retained by the Company as security for the fulfilment of the contract.

Should the terms of this advertisement be in any respect objectionable to any rock-drill manufacturer or contractor to tender upon, the company will be glad to receive proposals for the 2000 fathoms required from such manufacturer or contractor, the conditions to be stated by them in their proposals.

Sealed tenders, addressed to the Secretary, and marked "Tenders for Tunnelling," must be delivered on the mine on or before the 4th April next.

The lowest or any tender not necessarily accepted.

Further particulars can be obtained from the manager,
WILLIAM JAMES.

The Basset Mines (Limited),
Redruth, Cornwall,
March 2, 1896.

THE SOUTH AFRICAN TERRITORIES (LIMITED).

THE DIRECTORS INVITE APPLICATIONS for the position of GENERAL REPRESENTATIVE and AGENT of the Company in South-West Africa. Applicants must possess administrative experience in South Africa or some of the Colonies, and be competent to direct the exploration and development of the Territories, including the arrangements for the Railway contemplated under the Concessions granted by the German Government. It is desirable that applicants should speak German. Salary to commence, £1000 a year, and interest in the profits.

Applications, with copies of testimonials, to be sent to the MANAGER of the Company, 81, Cannon Street, London, E.C., not later than the 19th March.

HENRY WIGGIN & CO. (Limited),
NICKEL AND COBALT REFINERS,
MAKERS OF BEST RED LEAD FOR FLINT GLASS MANUFACTURERS,
BIRMINGHAM.

J. A. JONES, Mining Engineer,
(M.Inst.M.M., M.N.Eng.Inst.M.M.E.)
GIJON (ASTURIAS), SPAIN.

The Mining Journal,
RAILWAY AND COMMERCIAL GAZETTE:

An Illustrated Record of Mining, Metallurgical, Railway, Financial, Industrial, and Engineering Progress.

ESTABLISHED IN 1835.

THE MINING JOURNAL, RAILWAY AND COMMERCIAL GAZETTE, published every SATURDAY MORNING, price SIXPENCE, is recognised throughout the World as being the oldest, most influential, and most widely circulated Journal devoted to the interests which it represents. It circulates

ALL OVER THE WORLD,

Amongst Mine Owners, Capitalists, Investors, Mining, Metallurgical Engineers, Manufacturers, &c., &c.

THE MINING JOURNAL, RAILWAY AND COMMERCIAL GAZETTE has correspondents and sources of information in almost every quarter of the globe. Its policy is absolutely independent; its circulation is cosmopolitan.

THE MINING JOURNAL is neither controlled, nor is any interest in it held or exercised, by any mine owner, speculator, or syndicate; and it is in no way connected with any share-dealing agency.

TO CORRESPONDENTS.—Letters on Editorial Matters, or containing literary contributions should be addressed to "THE EDITOR." All matter intended for insertion must be written on *one side of the paper only*. The return of rejected manuscripts cannot be guaranteed. The Editor invites correspondence and items of news or information from readers in all parts of the World.

TO SUBSCRIBERS.—The Annual Subscription to THE MINING JOURNAL, including postage, is for:—
The United Kingdom, £1 4s.;
Abroad, £1 8s.;
payable half-yearly in advance. It can be purchased at all Railway Bookstalls and Newsagents throughout the United Kingdom for 6d.

TO ADVERTISERS.—The following is an abbreviated Scale of Charges for Advertising:—Companies' Prospectuses, £12 12s. per column, or £20 per page; Companies' or Legal Announcements, 9d. per line, with a Minimum charge of 7s. 6d; Sales by Auction, Publications, For Sale, Wanted, &c., &c., 6d. per line with a Minimum charge of 4s.

Displayed (Trade) Advertisements of 2 inches in depth (or more), Single Column measure, will be inserted at the following rates:—For 52 insertions 2s. 6d. per insertion for each inch in depth; for 26 insertions 3s per insertion for each inch in depth; for 13 insertions 3s. 6d. per insertion for each inch in depth. Terms for special positions and contracts may be had on application.

*** ADVERTISEMENTS (which should in all cases be sent direct to THE BUSINESS MANAGER) can now be received for the forthcoming issue of THE MINING JOURNAL, RAILWAY AND COMMERCIAL GAZETTE, on FRIDAY, at 18, FINCH LANE, E.C., up till 6 p.m., and at 3, DORSET BUILDINGS, SALISBURY SQUARE, E.C. until 9 p.m.

Editorial and Advertisement Offices:
18, FINCH LANE, LONDON, E.C.

Telegraphic and Cablegraphic Address: "TUTWORK, LONDON."
Codes used: "A.B.C.," Moreing's, and "Universal."

CONTENTS

Of this Number of "The Mining Journal, Railway and Commercial Gazette," March 14, 1896.

NEW PATENTS	329
JOINT STOCK COMPANIES—New Registrations	329
CONTRACTS OPEN	329
FLAMELESS EXPLOSIVES	330
SOUTH AUSTRALIAN LETTER	330
THE EXTENSION OF THE MAIN REEF WESTWARD OF THE FARM WITPOORTJE	331
STATISTICS RELATING TO COPPER	332
BRITISH GUIANA'S GOLD INDUSTRY	332
MEETINGS OF MINING COMPANIES—	
The Central Exploration Company of Western Australia (Ltd).	333
CORRESPONDENCE	334
MINING IN CORNWALL AND DEVON	334
SIDE LIGHTS ON THE LAW	334
REPORTS FROM THE MINES	335
OUTPUT OF THE INDIAN MINES	335
COMPANY FINANCE	336
NOTES ON GOLD MILLING IN CALIFORNIA	336
TIN TICKETING	336
DIARY FOR NEXT WEEK	336
REVIEW	337
LATEST FROM THE MINES; Cablegrams and Telegrams	337
LEADING ARTICLES—	
Flameless Explosives	338
The Revival of Welsh Mining, Broken Hill Proprietary	339
NOTES AND COMMENTS	339
THE RAND OUTPUT	340
THE MINING MARKET	341
THE METAL MARKETS—	
The London Metal Market	341
WESTERN AUSTRALIA'S GOLD OUTPUT	341
"THE MINING JOURNAL" SHARE LIST	342-343
BOARD OF TRADE RETURNS FOR FEBRUARY	347
NOTES FROM ANDALUCIA	348
PROVINCIAL SHARE MARKETS	348
ADVERTISEMENTS—(*See Index to Trade Advertisements, p. 326*).	

LONDON: MARCH 14, 1896.

FLAMELESS EXPLOSIVES.

WE presume that it is unnecessary to direct the attention of any of our readers, who may be either indirectly or directly interested in coal mining, to the report we are publishing of the Proceedings of the Flameless Explosives Committee of the North of England Institute of Mining and Mechanical Engineers. Such terrible disasters as the recent Tylorstown explosion emphasise only too eloquently the importance of such investigations. Let us note, by the way, that we are in this matter only following the lead of other countries; France, Prussia, and Austria have had their commissions on explosives in their relation more especially to the conditions met with in coal mining. In passing, we may remark that all these were Government Commissions. In this country this investigation—although we have a Royal Commission on coal dust explosives—is left to private initiative and enterprise, and is paid for by private individuals. Nevertheless, Great Britain has 693,000 persons engaged in coal mining, a good many more, in fact, than the three countries above-mentioned put together, which, employing respectively—Prussia, 297,500; France, 132,500; and Austria, 96,000—make up a total of 526,000 persons, or three-fourths of the number employed in this country. The inference is, obviously, that the working man, potent factor as he seems to be in the politics of this country, either has very much less power than he has on the Continent or else does not know how to use it if he haply has got it.

The history of the formation of this committee is an interesting and instructive one. For long after DAVY had produced his immortal invention, shot firing went on as gaily as though it were no source of danger at all. About a quarter of a century ago, however, the danger of shot firing, and the possibility of a shot igniting fire-damp, began to be appreciated. Very soon after another possible element of danger—in the coal dust that naturally exists in all coal pits—began to attract attention, and the experiments of Sir FREDERIC ABEL, W. GALLOWAY, and H. HALL proved conclusively that coal dust suspended in air formed an explosive mixture. The latter experimenter proved by irrefragible tests that a cannon shot fired into a mixture of air and coal dust could start an explosion, even though a naked light could not, and that in so far a powder shot was more dangerous than even a naked candle flame. Here it may be proper to observe that every shot is not such as is capable of starting an explosion; were it otherwise, blasting in coal mines would be an impossibility. When an explosive is used in the ordinary way for breaking down coal, the latter is first "holed" or undercut, and then the explosive is rammed into a shot hole in its proper place, stemmed and fired. If all has been done properly, the explosive expends its force in breaking down the mass of coal, and does no harm. But if the coal had not been holed, the explosive would have been unable to act in this way, as the coal would not be free to come down; it would, therefore, blow out the stemming from the shot hole, and a sheet of flame would be projected from the mouth of the hole. This is what is called a "blown-out" shot, and it is the blown-out shot that seems to be the fertile cause of colliery explosions. It appears to be impossible, or nearly so, to prevent occasional blown-out shots, and will continue to be so until the moral character of the miner has approached very much nearer perfection than it is at present. Possibly, when he gets to that stage, there may be no coal left for him to mine, but, meantime, he has to be protected even against himself. Two methods of rendering an explosion—even of a blown-out shot—free from danger presented themselves. One was to replace the stemming by a column of water, which would extinguish the flames of the explosive, and the other to produce an explosive, the gaseous products of which, when it was exploded, should be at so low a temperature as not to ignite an explosive mixture of air and gas. The elaborate and highly scientific investigations of the French Commission had paved the way largely for the latter system, and a very large number of high detonating explosives were put on the market and sold as flameless explosives, their manufacturers asserting that the products of their explosion produced no flame, and were incapable of igniting explosive mixtures of gas. More recently the term safety explosive has, by general adoption, been substituted for safely explosive, still with the same meaning. At any rate, it was so far looked upon as a proved fact that there were such perfectly safe explosives in the market, that the Coal Mines' Regulation Act of 1887 decrees that if there is any danger of explosion under conditions which it defines, no shot shall be fired "unless the explosive is so used with water or other contrivance as to prevent it from inflaming gas or dust, or is of such a nature *that it cannot inflame gas or dust.*" The italics are our own, for it is to the concluding words of that clause that we wish to draw special attention. The Act was passed, the Government apparently taking for granted that there were explosives to be had that cannot inflame gas or dust, but without having any experiments made to prove whether this was the case or not. A very few months after the Act came into force, the coal owners of the North of England determined to test the question for themselves, and to satisfy themselves which of the many explosives offered to them as safety explosives really came within the definition of the Act. The result of this determination was the formation of the Flameless Explosives' Committee, whose complete report is now before us. The first part of the report published about a year ago, which dealt with the behaviour of the various flameless explosives in mixtures of air and fire-damp, administered a rude shock to those who still had faith in manufacturers' circulars, and the wisdom of Parliament. It showed conclusively that all these "high explosives on detonation produce evident flame," and that though "less liable than blasting powder to ignite inflammable mixtures of air and fire-damp," yet that they were perfectly capable of igniting it, and hence "cannot be relied upon as ensuring absolute safety when used at places where inflammable mixtures of air and fire-damp may be present," so that by their use "the risk of explosion is only lessened and not abolished."

The second part of the report includes the behaviour of the various safety explosives in the presence of coal dust, with and without the presence of pit gas. We are avoiding altogether mentioning individual explosives, and are strictly confining ourselves to the general results, because such investigations as these have a decided trade aspect when viewed from the standpoint of the manufacturer of explosives, and it is just this aspect which we feel bound to ignore. Broadly, then, it was found that these explosives fired a mixture of pit gas and suspended coal dust far more readily than they did the pit gas alone, so that the danger of dusty as compared to non-dusty workings in gassy collieries is very clearly shown. Coal dust without gas was experimented on in a large number of tests, and it was found that these safety explosives would ignite air

containing fine coal dust in suspension even when the amount of the latter was very small, and occasionally caused an explosion with coal dust *in situ* lying undisturbed. This latter condition can, of course, never prevail in a working colliery. Some dust at any rate is sure to be suspended in the air current that sweeps past the working face of the coal, although there is no doubt that modern methods of water spraying can reduce this amount to a minimum. Of course, once an explosion is started it would rapidly disturb any dust lying on the floor of the travelling ways, and thus add to its own violence. One of the most important incidental results that has been attained by the committee is the proof of how small an amount of suspended dust is really required to form an explosive mixture. It was clearly shown that gunpowder far more readily ignites such a mixture than do the safety explosives, but it was shown with equal clearness that such explosives can ignite the coal dust mixture. The results of the first report are, therefore, only confirmed and emphasised by the results of the second. The claims of so-called safety explosives to be absolutely safe under all conditions are conclusively upset, although the fact that they are a good deal safer than ordinary black powder is also proved. Nevertheless, the fact remains that safety flameless explosives are neither safe nor flameless, and that such an explosive as the Coal Mines' Regulation Act calls for, does not exist, or at any rate is not in the market at the present moment.

It would be difficult to exaggerate the importance of these results, or the obligations under which every coal miner is to the North of England Institute, who have set themselves to solve a question of the first magnitude and of the greatest national interest. It is often overlooked how much Great Britain as a nation owes to its coal miners. Not only is it an unfortunate fact, which statistics demonstrate only too clearly, that our metal mining industries are yearly diminishing, whilst our coal mining ones are increasing in importance, but our very national life is bound up in that of our coal mines. Very few of those who have contributed to the recent animated discussions on the Naval Programme seem to realise that the whole of it really and absolutely rests on the basis of our coal mines, without which the Navy itself would be useless, and its construction impossible. Therefore, when coal mines and coal miners do so much for the country it is surely not unreasonable to expect the country to do something for them. The report of this committee on flameless explosives has done very much; but it shows, at the same time, how much more yet remains to be done. The investigation is well commenced—it is far from completed. Surely it is the bounden duty of the nation to continue and to complete it.

THE REVIVAL OF WELSH MINING.

CONSIDERABLE interest is now being taken by firms of metallurgists and mineral brokers in the lead and zinc mines of Wales, which for many years have been lying practically dormant, and this interest seems to lie not so much in the lead mines as such, but in the possibility of their being worked for blende, which mineral was often left untouched by the former workers. This is a curious reversal of the old times, when lead was the valuable mineral, and zinc, if worked, which was rarely the case, was a bye-product. The question, therefore, seems to be whether the old mines are worth reopening and working for blende, and this question has, we know, been recently put to mining experts of repute, and has been answered, in some cases favourably and in others the reverse. We have no hesitation in saying that many of these old mines do contain vast stores of zinc ore, while others, of which the lead lodes have been exhausted, carry lodes of blende, which, because they were blende, were left untouched in bye-gone days. Naturally enough, those mines which have been fully developed for lead, and in which the blende has been left either standing intact in the lode or thrown aside in the stopes or on the waste heaps, attract the first attention, and there are many such. They, of course, offer greater facilities for economical working and large immediate outputs than do the undeveloped properties, seeing that the old workings have largely proved the extent of the ore deposit, a matter which is always more or less of a speculation in undeveloped lodes.

We do not wish to name particular mines where the best conditions prevail for successful working, as we know that negotiations are now in progress for the purchase of several, but we may safely deal in general terms with the various mining districts of Wales. The beds of the mountain or Carboniferous limestone rising up from under the coal measure, Permian and New Red Sandstone strata of North Shropshire and Cheshire, form the natural boundary between England and Wales, and in them also are found the great lead and blende mines of Flintshire, most of which in the past have been worked principally for lead, and many of which are now lying idle. It must not be imagined, however, especially by those locally interested in these mines, that the whole of them can be profitably reopened and worked for zinc, for the right conditions do not everywhere prevail. Those who have studied this district will admit that although the lodes, which have a general east and west direction, may traverse the whole thickness of the limestone beds, yet they are only found to be mineralised in certain well-defined zones, first and chiefly in the lower pale-coloured limestones, and secondly, though to a lesser degree, in the upper grits and limestones. One of the first questions, therefore, for the mining expert to decide is whether the mine is located under the best stratigraphical conditions. If it is not, then there is at the outset a strong probability that if the lodes in the first instance could not be profitably worked for lead, they cannot be successfully reopened for blende. After that will come the question of water, with an excess of which many of the mines were troubled in the past; in testimony of which the gaunt ruins of the old engine houses remain to this day. The deep level drainage by means of the Halkyn Mountain tunnel has, doubtless, improved matters in this respect, but it has by no means cured them, and, consequently, those mines which have large quantities of underground water to deal with cannot hope to compete with others more favourably situated. Nor do these mines possess much value in their surface waste heaps, for these latter have been worked over and over again by stream workers, to use a Cornish expression, and do not now as a general rule contain much mineral of value. Doubtless the engineers charged with the investigation of these will pay due attention to all the points, for and against the value of the mines, and we will now pass on to the consideration of the Carnarvonshire lead mines which are grouped around the picturesque village of Bettws-y-Coed. Here the geological conditions are altogether different, for we have passed downwards out of the Carboniferous limestone of Flintshire into older strata of Cambro-Silurian age, consisting of blue and dark slaty rocks, grey grits, and hard felspathic beds, through which the lodes run in a general east and west direction with a southerly dip. Crossing these at nearly a right angle is the Gors lode, which probably follows the line of a dislocation, and is from 12 to 30 feet wide, and which is represented to contain about 4 tons of lead per fathom high and forward for its whole width There is one mine in full work in this district called the Parc, and it is fitted up with the most modern milling plant in Wales. Near it is a mine and mill owned by a French company, and it is strange to meet with a French manager and his family and Board of Administration in this picturesque corner of Wales. Some 2 miles south of the Parc, and near Bettws-y-Coed, is the Aberllyn Mine, which has recently, we believe, changed hands, and where it is proposed to commence operations at an early date in order to mine and mill the large amount of blende which has been left untouched in the lode by former workers. There are several other mines in the neighbourhood now lying idle, but which were formerly worked for lead. It is possible that the blende which was then valueless is still left in the lodes, and might be worked to a profit; but here again the expert charged with the examination of them must bear in mind the fact that although the lodes cut vertically through the strata, they are not equally rich in all the beds, and consequently the geological conditions must be very carefully studied before arriving at a conclusion. The same strata crop up again at the Point of Lleyn, near Pwllheli, and, as might be expected, we here find the remains of mining operations which were formerly the most productive in Carnarvonshire, and which, if the price of metals were to rise, could doubtless be brought once more into profitable activity.

Turning now southwards to Cardiganshire, we have one of the oldest and richest lead and blende mining districts of Wales, some of the mines in which were probably worked by the ancient Britons, as the old oval-shaped dressing stones at Cwmystwith would indicate. In any case, it seems certain that they were worked by the Romans; but from that time until the reign of Queen Elizabeth their history is not definitely recorded. Afterwards Sir HUGH MYDDLETON made a fortune in working them, which he spent in bringing the New River to London; and after him a Mr. BUSHELL took them up, and spent the money so acquired in defence of Charles the First. And so on, down to the present date, they have been worked with varying fortunes, though, with two exceptions, they are all at the present moment idle. We have recently had an opportunity of visiting this district, and may state that we received some valuable object lessons in the way in which mining and milling operations should not be conducted. There were many striking examples of money wasted in mining by thoroughly incompetent managers, who, if they had but studied the rudiments of geology, or had only kept their eyes fairly wide open when visiting other and successful mines, would never have been the cause of the cruel waste of money at the mines under their own control.

Then, again, on the surface the want of ordinary engineering skill on the part of these men has led to the fruitless expenditure of money in endeavouring, for instance, to make their water courses run up hill, or to build them by rule-of-thumb, and so lead the water to the bottom of the wheels instead of the top. Then, again, those who have visited foreign countries, and seen the fine automatic dressing mills employed there, would be staggered at the sight of the crude, inefficient, mediæval appliances used for ore dressing in this country. We feel convinced that although there are many mines here which should be promptly abandoned, there are others which it would pay to reopen and work by modern methods, while in places there are huge heaps of tailings containing still a high percentage of silver lead, which would yield a handsome dividend if treated in a modern concentrating mill. In short, the district is well worth the attention of capitalists, but they must be extremely careful to obtain only the soundest advice as to the mines towards which they should direct their attention. The geological conditions differ again from those prevailing in the districts already mentioned, and require careful study and local knowledge. The lodes cut through the beds known as the Llandeilo in a general direction of east-north-west by west-south-west, but this direction is so varied by crosscourses as to assume a zig-zag course, especially in the case of the smaller lodes. The lodes are not equally productive in all the beds as they cut through them, and consequently the country is roughly divided into four mineral zones marking the outcrops of the beds in which the lodes are productive, so that one of the first questions to be decided is whether at the mine under examination the lode cuts through compact thick-bedded slaty rock of a bluish or greenish grey colour, and a soapy feel, in which lead ore is most abundant, or whether the country rock is of a soft shaly strata or gritty beds, in which the lodes are, as a rule, impoverished. We have indicated briefly some of the conditions necessary to successful mining in Wales, and we may at a future date describe the other mining districts in Wales and Shropshire. Enough, however, has been said to call attention to some of the leading features, and we trust that the information given will be of value to those who propose to invest their capital, and also to those who, as residents and miners, will be benefitted by such an investment.

BROKEN HILL PROPRIETARY.

WE well remember in our comment six months ago on the half-yearly report of the directors of this company that though to some extent encouraged by the then position of affairs, yet we expressed ourselves as somewhat doubtful of the prospects of the immediate future. On that occasion we remarked that "though the operations for the six months are satisfactory, yet it is with the future that the prospects do not seem so encouraging, though perhaps it were unwise to say that this may not turn out more prosperous than indications foreshadow. . . . It is the immediate future that seems least hopeful, but any day might bring about such a state of things as to make even this look considerably brighter than it does at present." A perusal of the half-yearly report ending November 30, 1895, which has just reached us from Melbourne, reveals the fact that the position of the company is little altered. But this is owing to a calamity over which the directors had no control, and which for a greater portion of the half-year interrupted operations in nearly every part of the mine, and consequently retarded progress to a grievous extent. We refer, of course, to the disastrous fire which occurred last July in a portion of the property known as McGregor's open-cut. In the report before us, the directors deal directly very briefly with this fire, and refrain from going into minute details, but indirectly throughout every page reference to it is made, and this all the more impresses one with the excessive, damage it has committed. Six months ago we remarked that one of the problems which must be solved, and upon which the future of the company greatly hangs, was the reduction of working costs, and we expressed our pleasure at the efforts made by the officials to bring about this desirable end. We noted with equal satisfaction that their efforts had been successful, and that the cost of production had been brought down nearly 3s. per ton. We now learn, however, that during the past six months the cost has been considerably increased—namely, by as much as 6s. per ton, but as this was owing to exceptional circumstances and to the expenditure incurred by the fire, it is an increase which the shareholders can pardon; one, at any rate, which they may not regard with any great dissatisfaction. Had it not been for the exceptional energy displayed by the officials of the mine this expenditure could easily have been considerably increased; for that reason, therefore, the shareholders have cause to be thankful that the loss and expenditure incurred has been kept within reasonable limits. Naturally, the net profit has been likewise reduced. It amounts to £292,162 5s. 6d., as against £344,760 7s. 8d. for the previous six months, not a bad result considering the exceptional nature of the difficulties and obstacles met with during the half-year. Of this sum a similar amount, as in the previous half-year—viz., £288,000 has been distributed in dividends, whilst the balance of £4162 5s. 6d. has been carried to the profit and loss account, which now stands at the substantial sum of £661,358 4s. 7d. The directors have been unable to make much headway with the policy foreshadowed by them of economising the higher grade of the oxide ores to such an extent as to prevent excessive cost, and of reducing the output to such limits as will allow the maximum of economy in the treatment to be secured. They had only just commenced to put it fairly into practice when the fire occurred, and thus, unfortunately, put a great obstacle in the way. This fire rendered it necessary to curtail the production beyond the limit contemplated, and whilst interfering with the regularity of the ordinary operations, it caused much delay in the prosecution of the sulphide prospecting scheme, which it is most desirable should be proceeded with vigorously. In spite of this interference, however, the manager regards the operations for the past year as satisfactory, seeing that more careful and closer work has been attained in every department. The prospecting of the sulphide zone was also greatly retarded by the fire, and the work that has been carried on has merely confirmed the presence of the bodies on the upper levels, which at many points were uncertain, and also the estimates of the quantities made last year. To provide for the more extensive workings of the sulphide ores a new extraction shaft will be required, and this has been commenced. The outlook for the current half-year may be regarded as promising.

NOTES AND COMMENTS.

BOTH in regard to the past and the future operations of the Central Exploration Company of Western Australia, the Chairman (Mr. Jas. Jackson), at the annual general meeting of the shareholders on Thursday, was in the enviable position of being able to place before the proprietors a very pleasing statement. Considering that the company is still in its infancy, a dividend of 10 per cent. is no small matter for gratification, but the brilliant prospects held out as to the future development of the properties possessed by the company completely justifies the expectation that futher dividends are in store for the possessors of shares in this undertaking. The Black Flag Proprietary property—the most important acquisition of the company—has turned out sufficiently satisfactory to justify the flotation some months ago of the company, in which the board still retain an interest of 199,000 shares. A number of these shares have been realised, but the directors, putting implicit confidence in the company, thought it was unadvisable to part with any more at the present moment. A 50 stamp battery is on its way to the mine, and it is believed that ere long good returns will be forthcoming. In addition to this, excellent results are anticipated from the development of the Crœsus North No. 1 Mine. A rich main reef, reported to resemble the Great Boulder, has been discovered, and is proved to be 600 feet in length. At 136 feet the reef is 34 feet wide; 5 feet of it assayed from 5 to 11 ounces a ton, and the remainder from 1 to 5 ounces a ton. Mr. Jackson was

not able to render so favourable an account of the John Dunn and Hopetoun properties, although, he remarked, the encouraging reports they had before the purchase have been fully confirmed. Interests or options have also been acquired by the company in other properties, and altogether there seems every reason to expect that the concern will constitute a considerable source of profit to the proprietors.

THE general exodus from the other Australasian colonies into West Australia is producing its inevitable effects upon industrial life elsewhere on the Continent. Victoria, with its brilliant records of past achievement, finds it especially hard to take a second place among the gold-producing colonies at the Antipodes, the more so as its capabilities are quite beyond question. That the effects of neighbouring competition are not altogether harmful is shown by the resolute way in which the industrial leaders are, so to speak, pulling themselves together, so as to make as good a fight for supremacy as is under the prevailing circumstances possible. But, as they are finding out, there is a certain fashion in gold mining which rules the home markets and controls the choice of the company promoter, and for the present public favour is very strongly set towards West Australia. The meteor-like suddenness and brilliancy with which this new body has shot into prominence in the industrial firmament, accounts, no doubt, in a large measure for the strength of its hold upon the favour of the investing public at large. There is more force joined to sentiment in these matters than would be at all widely recognised. Much, moreover, is certainly due to the striking agreement among expert authorities upon the merits of the West Australian gold fields. Rarely, if ever, has a mining field started upon its career attested as to merit by a greater weight of specialist opinion. Public attention and favour must largely, if not exclusively, point the direction of mining activity, and the inhabitants of Victoria are only giving play to natural feeling when they lament the bedimmed lustre of their own fields. They may, however, get satisfaction by reflecting that ultimately, if not at first, a really meritorious gold field must win its way into general esteem, and their confidence in the solid merits of the large tracts of auriferous country within the borders of Victoria must be very strong ground for regarding the future with high expectation. *Tout vient à point à qui sait attendre.*

ENGLISH newspaper correspondents established at Cape Coast Castle report that every ship arrived from England since the entry into Kumasi has brought over its complement of persons bent upon testing the country's gold productive capacities, and exceedingly hopeful as to the results of their projected operations. Though it is impossible to ignore the fact that there are many difficulties in the way of successful gold mining in Ashanti, some experts of standing—notably, Mr. Thomas Cornish, in a recent communication to our columns—attest from personal observation that the country is largely auriferous in character. "From what I have seen of the country between Axim and Tacquah gold fields," says Mr. Cornish, "I am satisfied that there is a vast amount of auriferous country that can be profitably developed around there, and right away through to Ashanti." Mr. C. J. Harvey, M.E., writes to the same purpose. "I have no hesitation," he affirms, "in saying that the country is traversed by a number of promising fissure veins, many of which will assuredly prove valuable." Mr. Harvey, moreover, alludes to rich deposits of alluvial gold," already worked in a small way by the natives. Thus it will be seen that if the difficulties of climate and communication can be supported, there is no reason, *prima facie*, why the country should not turn out extremely well so far as the mining industry is concerned. There is a good supply of native labour to be had, and those familiar with the economical conditions, if so they may be called, prevailing near the equatorial zone in Africa, will not be surprised to hear that it is extremely cheap. But the great obstacle to enterprise is the complete lack of satisfactory communication between the coast and the interior. The cheapness of labour notwithstanding, it is said to cost £50 a ton for carriage from Cape Coast to Kumasi. Where all the necessary mining machinery has to be transported on the heads of natives, it is obvious that the industries would start heavily handicapped. There seems some probability that in the not very remote future a light railway may be run up into the interior, in which case the whole question will be put upon a different footing. This step is certainly a prime necessity if we are to have any real industrial progress in the country.

INDIAN colliery owners and companies are crying out upon the freight charges as being responsible practically for the failure of native coal to contend successfully against European importations. It is even said that European, Japanese, and Australian coal is ousting the Indian product from the markets, and if the statement conveys a fact, there would certainly seem to be something wrong about economical conditions which permit the successful entry into markets of coal coming half way over the globe. Huge stacks of coal have apparently been accumulating lately, and, in answer to enquiries, the owners return but one remark—"No demand." Thus it would appear that England is not the only country where the question of railway rates rises into importance, and that India is in the same difficulty with us in this regard. The question is everywhere a very difficult one, and the reconciliation of the necessity for leaving a profit-margin to the railway companies, and cutting the rates as fine as possible for the merchants, is a delicate movement in financial diplomacy which requires the most careful handling. A suggestion, which may possibly lead to solving the problem, has been made, to the effect that a representative board of railway people and merchants should sit to go into the matter, and to arrive, if possible, at some point where the interests of both parties might become identified. It is certainly the fact that in this country the railway companies are making strenuous efforts to go with the times, and where the fierce light of public criticism falls upon a weak spot the most determined efforts are made to cover it. For ought we know, a similarly progressive spirit may be alive among the Indian railway people, and may eventually lead to the adjustment of this difficulty. In these days a country can afford to neglect no steps for legitimately developing its internal industries.

A COMPARISON of the figures relating to the gold output of Victoria for the year 1895 with those of the preceding year is a most instructive pursuit. The brilliant prospects of this gold field, and the lamentable manner in which for some years it has been developed, without mentioning the enormous waste of auriferous ore that at one time occurred, have often formed the topics of leaders and notes in these columns. Consequently, it affords us the utmost pleasure to take cognisance of the rapid progress recently made in opening up, and proving the rich character of the Victorian reefs. It is to be earnestly hoped that the revival of gold mining in the district, which since the year 1891 has most assuredly asserted itself, will continue for a long time to come, especially in view of the discovery lately made of some very rich ground, the reef in which it is confidently anticipated extends for a considerable distance. Relying on the expectation awakened by the good fortune attending the efforts of the miners at Sheep Station Creek, the location of the discovery, doubtless others will be stimulated to explore neighbouring properties hitherto unbroken. Therefore, during the next few years we may look forward, with little uncertainty, to a considerable increase in the activity now displayed in the Victorian colony, attended, of course, with the almost natural sequence—a substantial addition to the gold returns in each successive year. Under all the circumstances, after making abundant allowance for the improbability of the recent good discovery being a true indication of the average value of the reefs in this gold field, one cannot possibly help feeling highly satisfied with the steady progress already made. It is a proof, if any proof were needed, that the future in store for Victoria is a good one, and should demonstrate that the Coolgardie district is by no means the only portion of Australia where the gold mines are remarkably productive.

DEALING more in details with the returns above alluded to, the yield for the year 1895 is put down at 693,146 ounces, as against 673,680 ounces in 1894. This shows a gratifying increase of 19,466 ounces, while, contrasted with 1891, last year's output indicates an increase of over 116,000 ounces. But it must be remembered that the year 1891 was a very poor one, the production being the lowest recorded for the preceding 10 years. In 1886 the return was given at 665,196 ounces. However, a steady decline then set in until 1891, the only exception being 1888, when the yield was an increase over that of the previous year. A somewhat peculiar feature in the returns for 1895 is the large increase in the Gippsland output—26,299 ounces. This more than accounts for the aggregated increase of all the Victorian mines during the year. Gippsland is at present, comparatively speaking, a long way behind the leading fields — Ballarat and Bendigo. Though the former's yield was 166,215 ounces, these figures show a heavy falling off when compared with 1894. In regard to the two different sources of the yield, at the larger mines the advance in alluvial was satisfactory, but, owing to the great decrease in the output at Ballarat, there was a little decline in quartz. In the earlier part of the year the yield did not exceed the average quantity, but in the last quarter there was a general improvement. Turning to what is even a more interesting point for the consideration of shareholders—the amount of dividends paid by the companies carrying on operations in Victoria—the total, we find, was £438,526. In view of the increased output of gold it is not at all pleasing to find that this amount was exceeded in 1894 by over £16,000, but to some extent this can be explained away by the fact that Ballarat paid about £65,000, and Beechworth £2455 less in 1895 than in 1894. Nearly all the other companies paid a larger dividend than in the previous year. The returns also show to what extent labour has been required, and it is stated that the number of men employed on the mines increased by over 2000 during 1895, while compared with 1892, the increase was over 6000. In the Castlemaine and Gippsland districts, following on the rich finds in these localities, great additions were made to the staffs. It was only in the Ballarat district that a number of hands were discharged through the finishing up of some of the old workings. Reviewing the whole of the statements set forth in this annual document, there are ample grounds for believing that the revival of the mining industry in Victoria is still being maintained.

ACCORDING to the Board of Trade Returns for the month of February there has been a very pleasing revival of trade, both in regard to exports and imports, as compared with the same month of last year. Even making some allowance for the fact that this time there were 29 days in the month, while the weather was milder than at the same time in 1895, the increase can be considered to be a gratifying one. Dealing with exports first, we find that of the gain of over £3,700,000, metals alone indicated an increase of £778,000, notwithstanding that the falling off in the demand for tin-plates in the United States has continued, the decrease for the month being estimated at £189,000. This is a serious matter for the Welsh industry, although the difference is vastly greater in consequence of the abnormal increase that took place in the demand, owing to exceptional circumstances, last year. Altogether, however, there is ample evidence of the healthy state of the metal market, especially of manufactured copper. In fact, with the exception of tin plates, the increase has been a general one. At the present time India is taking a large quantity of railway iron, while the United States has also demanded a heavy supply of the same material. No doubt the rapidity with which the gold fields of Australia and South Africa are being developed accounts to a large extent for the increase in the exportation of machinery. Steam engines of every description have been and are still leaving England in numerous quantities for her colonies. British manufacturers of mining plants received £26,800 more from South African traders during last February than in the same months of last year, whi increase from Australasian resources was over £17,000. In regard to the imports, it is rather discouraging to notice an increase in the quantity of manufactured iron that is being brought to our shores, for no doubt we can, or ought to, produce quite as much of this material as is required for home consumption at our own smelting works. The increase in the importation of nitrates is easily accounted for, as last year the stormy weather encountered by the vessels loaded with this article delayed their arrival enough to affect the returns of 1895. Looking at the returns generally there seems to be every reason for satisfaction at the present commercial status of the British Empire.

HUNGARIAN coal mining is developing and progressing satisfactorily, the record for 1895 being a distinct advance upon anything previously recorded. The demand for the product is uniformly brisk, and under this encouragement exploratory works, resulting in the discovery and working of new beds of coal, have been and are being vigorously carried out. The principal coal mining companies are in good working order, and their operations, under the genial sun of general commercial prosperity, are expanding considerably. Thus we hear of the chief company in Hungary sinking two new shafts in the most productive district, mining having already been commenced in these additional openings. The year's output reached a total of 1,000,000 tons, which is an increase of 250,000 upon the figures of the year preceding. This is merely one instance to illustrate the great improvement which has taken place in the condition and prospects of this particular branch of industry. Others could be cited to the same purpose. It is even more satisfactory to learn that better methods of working are being introduced, and that the opening up of the industry is taking place upon more scientific lines. This general disposition to abandon what is commonly and unmelodiously termed the "rule-of-thumb," which may be noted in other than European countries, is one of the most satisfactory points in the general mining outlook, and gives every promise that the maximum of results, combined with economical management and modes of operating, will uniformly obtain in the future. Hungarian coal mining has, with other branches, been afflicted, though not, perhaps, to any large extent, with the strike evil, but obstacles such as these do not seem to have offered any serious bar to progress, nor to have militated against the spread of a healthy spirit of enterprise. There is ground for hoping that coal mining in Hungary is, so far, only in its infancy.

ELAINE, Victoria, is mentioned by the Australian papers as the probable *venue* of a boom. Already a revival—of an industrial nature—has set in there. The local writers are sympathetically regretful that the star of Elaine should have had its lustre bedimmed for a time by the superior brilliancy of Coolgardie and the Murchison, but they are clearly hopeful that in time the steady persistency with which this lesser luminary emits its light may have its effect in a wide recognition of the field's merits. Elaine is not without its history, though for the last 14 years its annals have been vacant. Ballarat, in the old days of gold rushes, exerted a strong attraction upon the local mining fraternity, with the result that Elaine has since been almost deserted. The penetrating power of the recent and present boom and its resuscitating influences are great; so much so that Elaine has awakened from its prolonged slumber, and is setting to work again. Mining has still been carried on upon a minor and unpretending scale by individuals who appear to have profited satisfactorily enough upon their operations. Hitherto, it must be admitted, the field has scarcely had an opportunity to give a good account of itself. Little or no outside capital has been put into the enterprise, while the half-hearted timidity with which work has been prosecuted is shown by the fact that an encounter with a slide was universally sufficient as a deterrent to put an immediate period to the workings. A reversal of this policy is the first essential of anything like an adequate development of the field, and it is well to note that this view is spreading and bringing about good results. The lodes are not over broad, but, on the other hand, they are fairly productive, and since they are to be opened up in a manner not previously attempted, indications look well for Elaine. Some local prophets, indeed, who are taking the field in hand, go so far as to say that the output from Elaine for this year will form no insignificant feature in the colony's total returns. Such is the hope and expectation prevailing in the locality.

RAND OUTPUT FOR FEBRUARY.

THE total output from the Rand district during the past month amounts to 167,018 ounces, and shows an *increase* of 18,840 ounces, as compared with the previous month's total, and a *decrease** of 2277 ounces, as compared with the corresponding month of last year. The following table gives crushings to date:—

	1891	1892	1893	1894	1895	1896
	Ozs. dwt.	Ozs. dwt.	Ozs.	Ozs.	Ozs.	Ozs.
January ..	57,205 15	84,560 8	108,374	149,814	177,463	148,173
February ..	50,079 2	86,649 8	93,252	151,670	169,295	167,018
March	52,949 1	93,244 11	110,474	185,372	184,945	—
April	55,871 16	85,562 6	122,053	158,745	188,323	—
May	54,673 1	99,428 6	116,911	160,793	194,581	—
June.....	56,868 1	103,252 5	122,907	168,142	190,941	—
July	54,924 19	110,179 1	128,169	167,958	199,453	—
August ...	59,070 4	102,393 3	136,069	174,977	193,573	—
September	65,801 5½	107,851 13	129,585	176,707	194,764	—
October ...	72,792 8	111,167 8	135,590	173,378	197,852	—
November	73,393 15	106,794 15	138,440	175,304	195,118	—
December	80,312 11	176,748 17	146,367	182,104	176,498	—
	729,237 3½	1,120,860 1	1,478,473	2,108,459	2,277,755	315,191

* Decrease due to scarcity of native labour and political situation.

THE MINING MARKET.

FRIDAY EVENING.

A small settlement satisfactorily concluded.—Sharp fluctuations in Chartered, but restricted dealings in others. — West Australians inclined to improve.

THE public appears to be quite out of the Mining Market, and all that is going on is between the professionals. One broker after another has the same tale to tell. "I am doing no business, and, to tell you the truth, I am not very anxious to." Under the circumstances, it is little short of marvellous that things keep their prices in the way they do. To a large extent quotations are nominal, but all the same there is no getting away from the fact that the level of prices is maintained, and attempts at making money on the bear tack are no more successful than operating for the rise. The Bow-street trial of Jameson and his comrades is no doubt to a large extent responsible for the apathy of the speculative public. People frankly confess that they do not see their way, and in the absence of definite views, recognise the wisdom of standing aloof from the markets. It is not easy to forecast when this state of affairs will come to an end. As soon as the next Account is over we shall have Easter upon us. In the meantime the Jameson trial is likely to drag out its weary length for several weeks to come, the exigencies of a police court standing in the way of any businesslike dispatch.

On Saturday morning the Kaffir Market opened flat on further realisations by discouraged bulls, desirous of avoiding a carry-over. About noon the sales came to an end, and a sharp rally ensued on bear closings, which had the effect of restoring the level of prices. Owing to this duplicate movement, the day's business was heavier than is usually the case on a Saturday. By way of stimulus to speculation came the news of the arrest of two officials of the De Beers and Chartered Companies respectively, and discussion of the appointment of Earl Grey as Administrator of Mashonaland, which was construed by some as a direct indication of the weakening of Mr. Rhodes's prestige. There was practically nothing doing in West Australians, but where changes occurred at all they were in the downward direction. Indians were firm, and New Zealand shares irregular. Monday was making-up day in the Mining section, and the lighter Contango charges created the impression that the bull account was reduced. A sharp rise accordingly took place, but this was not maintained, and during the afternoon a determined attack was directed against Chartered, accompanied by persistent rumours, first that Mr. Rhodes was to be arrested, and then that he had been arrested for implication in the plot against the Transvaal Government. Africans closed flat all round, and a like condition prevailed in the West Australian section, resulting in lower prices. There was a fair amount of business doing in Miscellaneous, the features being a fresh spurt in Indians and New Zealanders, and a tendency to improvement in Broken Hills. These characteristics were repeated on Tuesday, the evidence at the Jameson trial giving colour to the persistent rumours of Mr. Rhodes's arrest. On Wednesday dealers had Mr. Chamberlain's direct denial of the story of the contemplated arrest, and accordingly a miniature bear hunt ensued, the sellers of the previous day hurrying in to cover their commitments, with the result that prices were appreciably better at the close. More firmness was noticeable in West Australians, and New Zealanders were active, but there was less doing in Indians. On Thursday a distinct improvement took place all along the line with Africans, though dealings were admittedly professional. Signs were not wanting of a widening of the interest in West Australians, but things were quiet in the Miscellaneous Market, though buyers still predominated for New Zealanders. There has been absolutely no business to-day—at any rate, on public account; but improved prices in the South African Section were maintained during the morning, and they have been bidding for several specialities in the Westralian Market. The last prices are not quite the best, but the general tone is firm.

South Africans.

We have indicated to a large extent what have been the motive causes, or rather the pretexts, for the fluctuations in this section. On Tuesday the February crushing returns at the Witwatersrand were announced, the total output being 167,018 ounces, which compares with 148,178 ounces for the preceding month, and 169,295 ounces for the corresponding month of 1895. This announcement had virtually no effect upon the market. We have mentioned that Contango rates were lighter on Monday than they have been for two or three Accounts previously. It was hinted, however, that the apparent scarcity of stock was artificial, and due to manipulation in the hope of creating a platform for fresh selling, more particularly in the case of Chartered, upon which the rate opened at fourpence Contango, and went off to even. The charges on Gold Fields, Gold Trusts, and other shares, having a free market, opened at 6 to 7 per cent., but eased off as the day proceeded until they had almost disappeared. Chartered were just under 5 on Saturday, and fell to 4⅞ on Monday, when the story was put about that the clique which was to have lifted a large block of shares, had failed to complete its arrangements. On Tuesday the shares were at one time offered at 4½, but on Wednesday the sharp rally carried them back to 5. They kept in the neighbourhood of this figure throughout Thursday, but to-day receded to 4¹³⁄₁₆, only to recover to 4¹⁵⁄₁₆, which leaves them 1/16 lower on balance. Gold Fields were offered below 12½ on Monday, but recovered promptly as soon as the better tone set in. They are 1/16 higher to-night at 13³⁄₁₆. Gold Trusts and Gold Fields Deep have put on ⅛ at 8¼ and 10 respectively. Rhodesian Land Companies have followed the course of Chartered, and, after being depressed in the early part of the week, have so far recovered as almost, if not quite, to expunge their losses. Rhodesia Exploring closes ¼ down at 8½, but Rhodesian Mining and Finance is the turn harder at 1⅛, and a gain of ¼ is shown in Purdon's Rhodesia Gold Reefs, which have been bought on the issue of a satisfactory circular giving particulars of the 340 claims held by the company. Pardy's Mozambique are quoted at 1¼ ex rights. Mashonaland Agency are slightly easier at 2¹³⁄₁₆. and Willoughby Consols have lost 1/16, at 2¹⁵⁄₁₆. Tati Concessions have put on ½, at 2; but Henderson's are rather easier at 2⅛. East Rands were specially depressed on Monday, closing sellers below 6. They recovered strongly on Thursday, and close with a gain of ⅛ on the week, at 6¼. St. Angelo are no less than £1 higher, at 4⅛, advantage having been taken of the fall on the closing down of the mine to pick up shares in view of the prospective possibilities of the undertaking. Comets, too, have put on 10s. at 2⅞, and Anglo-French Exploration, so largely interested in both concerns, are ½ higher at 4½, after going to 4⅝ on Thursday. Geldenhuis Deep are ¼ down at 6¼, disatisfaction being expressed with the 2793 ounces crushing for February, which shows a very poor return per ton. Rand Mines have scored a full point at 29, but other Deep Level shares are within a shade of last week's prices. No serious changes are shown in the Eckstein group, except in the case of Ferreira, which have not only recovered their 13s. dividend, but are a full point to the good at 18½ x d. For this a remarkable crushing is responsible, the return of 11,770 ounces being nearly 2,000 ounces better than the January figures. Modders have risen ½ to 10⅜, and Geldenhuis ¼ to 4¼, whilst Henry Nourse at 5⅜, City and Suburbon at 4⅜, Salisbury at 4, and Wemmers at 9⅞ are all ⅛ lower. The Barnato stocks have been decidedly strong during the last two days. "Johnnies" on Monday were flat at 3½, but to-night they are ⅛ up on balance at 3⅝, without allowing for the dividend of 3s. deducted. Glencairn have achieved a similar gain at the same price, though in this case the dividend deducted was only 2s. 6d. A special demand sprang up on Thursday for Langlaagte Royal, which close 1/16 higher at 2½. Reitfonteins have put on ¼ at 4⅜, Croesus ⅛ at 4⅛, George Goch ⅛ at 2⅝, Ginsberg ¼ at 1⅞, Barnato Banks ¼ at 1¹⁵⁄₁₆, and the Consols 1/16 at 3⅛. In the Robinson Group Randfonteins have once more attracted chief attention, being especially flat on Saturday, but recovering smartly with the general market. They are finally 1/16 better at 2⅞, whilst Block B at 1⅞, Langlaagte at 5⅛, and Robinson Banks at 6⅜ are all on last week's marks. Knight's at 6⅞, Durban-Roodepoort at 6½, Aurora at 1⅝, Meyer and Charlton at 5⅝, Steyne Estate at 1⅜, Van Ryn at 6, Van Ryn West at 3⅝, and Worcester at 4, are all in *statu quo*. Village Main Reef have put on ⅝ at 7, Robinson ¼ at 9⅝, Kleinfontein ⅜ at 3⅝, and Crown Reef ¼ at 10⅜. Other changes are not important. The small Lydenburg shares are generally rather easier, Barretts having lost 1s. 6d. at 12s. 6d., and Graskops 9d. at 5s. 3d. Balkis and Lisbons are both quoted at 6s. 9d., a mining return of 821 ounces having been received from the latter property. Spitzkops are rather easier at 15s., Diamond shares have improved, Jagers have gained ⅜ at 10⅞, and De Beers ⅜ at 27⅞. St. Augustines have put on 2s. at 12s. 3d.

West Australians.

Reports from Perth speak of the increase in the gold output of Western Australia, the return for February amounting to 17,922 ounces, or 1572 ounces more than in the previous month. The Coolgardie district yielded 11,460 ounces out of this total, and the Murchison 4840 ounces. We have already alluded to the better tone of this market since dealings for the new account set in, and though business is restricted to a few of the leading favourites, the tendency is distinctly harder. Great Boulders are ½ up at 6¼, on the announcement of another 2s. dividend, and Brownhills after being sold down below 6, close with a distinctly strong appearance, 1/16 higher at 6¼. Associated were specially flat on Saturday, closing sellers below 2, but there was a smart rally on Monday when the rest of the market was weak, and a demand for the shares to-day leaves them 1/16 higher on balance at 2¹⁵⁄₁₆. Hannan's Reward are unchanged at 8⅝, a cable having been received from the mine that the dry crushing process is to have a trial. True Blues have put on ⅛ at 1½, and Hannan's Proprietary 1/16 at 1⅝. A prominent favourite to-day has been Lake View, which at £3 bid is ¼ higher on balance. Conspicuous flatness is shown to-day in Mainland Consols, which have been sold down nearly 10s. since Thursday, and close 1/16 lower on the week at 2⅜. West Australian Gold Fields have been steadily supported on the satisfactory accounts received from the company's Hannan's property. The shares close ½ higher at 7. Colonial Finance were flat on Monday, being offered at one time at 4 premium. The announcement of the closing of the books for the declaration of a dividend caused a renewed enquiry, and the shares are finally ⅛ higher at 4½. Hampton Plains, after dipping to 3⅞, are unchanged at 4, and slight gains are shown in Lady Loch at 2⅛, Lady Mary at 1½, Wealth of Nations at 1 1/16, and Big Blow at 1/16. White Feathers have receded 1/16 to 2 1/16, as have Share Corporation to ⅛ premium. London and Globe Finance are 3/16 down at 2½. Menzies Properties as a rule are slightly easier, but Hit or Miss, which are rather a House tip, are ⅛ better at 1⅝.

Miscellaneous.

A scarcity of stock was revealed in the Settlement of the Account in Indians, with the result that prices have improved, and look like going still better. The chief gain has been in Champion Reefs, which have scored ⅛, at 7. Mysore have recovered their 4s. 6d. dividend, and are a further ⅛ up, at 5½. Nundydroogs have scored about 1/16, at 2⅛ x.d.; and Ooregum issues are the turn harder at 3¼ and 4. In the New Zealand group the run has been upon Hauraki, which at one time rose to 17s. 6d., but finally close without change at 15s. 6d. Waihi have given way nearly ⅛ to 6 x d., on a less satisfactory return, explained, however, by a difficulty with the water, necessitating a stopping of the machinery. A quiet demand for Charters Towers has continued, but changes are not important. A return of 1160 ounces from the Day Dawn Block serves to confirm favourable estimates of the prospects of this property. The shares are a shade better at 12s. ex 6d. dividend. The London board of the Brilliant Block Company is organised, and the offices will shortly be opened. The shares are firm at 17s. 6d. Copper shares are rather easier. Tintos have lost 1/16 at 18½, Mason and Barry ⅛ at 2⅜ and Anaconda 3/16 at 6 1/16. Broken Hills have responded to a better quotation in Melbourne, and close 1/16 up at 2⅝, but British are 1s. down at 13s. 6d. Golden Feathers have risen 1s. 6d. to 13s. 6d. Burma Rubys are 1/16 easier at 1⅛. Alaska Mexican have lost ⅛ at 1⅛, but Treadwells are unchanged at 5½. Wentworths have put on ⅛ at 1 1/16, but Aladdins are unchanged at 1¼.

STOCK EXCHANGE SETTLING DAYS.

Settling Days on the Stock Exchange are as follows:—

CONSOLS.

STOCKS AND SHARES.

Wednesday, April 1.

MARCH.

Thursday, March 26 | Friday, March 27

Contango Day for Mining Market:—

Wednesday, March 25

"WHAT TO INVENT?"—This is the title of an attractive pamphlet published by Mr. G. H. Rayner, Registered Patent Agent, of 37, Chancery Lane, W.C. There are thousands of persons in these days of intellectual progress who possess in an exceptional degree the invention faculty, but who, unfortunately, put it to no practical use because they are in the dark as to what has been invented and what is really wanted. Mr. Rayner has set himself the commendable task of enlightening and guiding these individuals, and his pamphlet is, therefore, bound to become very popular. This gentleman is especially fitted for this task, seeing that he has had a vast experience as patentee agent, and knows not only what has been invented, but precisely what is required, and what in the satisfying of those requirements will more readily bring success. In this pamphlet he gives a list of 50 subjects. It is a valuable work, and one in consequence likely to have a large circulation.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET, LONDON, MARCH 13.

Copper.

THE speculative market opened 2s. 6d. lower - viz., at £45 5s. cash G.M.B.'s, and was gradually depressed, owing chiefly to realisations, plus a certain amount of "bear" selling, in connection with Stock Exchange manipulations. £44 18s. 9d. s.c. and £45 7s. 6d. three months were accepted on Monday, £44 18s. 3d. to £45 2s. 6d. on Tuesday, with a rally to £44 18s. 9d. s.c. and £45 8s. 3d. three months. On Wednesday spot was dealt in at £45½2s. 6d. down to £44 11s. 3d., and three months at £45 10s. down to £44 17s. 6d., whilst yesterday opened still lower. £44 5s. s.c., and £44 12s. 6d. three months being done. At this point an improvement set in, the general position of the article,—as evidenced by the rapidly decreasing stocks, and the brisk rate of consumption both here and in the states—making itself felt directly the market is left to itself. To day business was done up to £44 17s. 6d. s.c., and £45 5s. three months, and the close is firm at £44 17s. 6d. and £45 5s., buyers of s.c. and three months respectively. The American market is a shade easier, but refined copper is not offered plentifully from any quarter.

Tin

has again been a featureless market, and the rise of 10s which took place during the first half of the week—viz., from £ 0 5s. to £80 15s. cash Straits was more than lost by Thursday evening, when the cash value stood at £80 3s. 9d., and three months at £10 17s. 6d. The transactions were of moderate extent varying from about 75 to 250 tons per day. To-day's market was better at £ 0 5s. s.c., and £80 15s. 3d. to £81 three months, and the close is firmer at £80 7s. 6d. s.c., and £81 three months sellers. In Holland, tin advanced from fl 36½ s.c. Billiton, and fl 36¾ three months ditto, to fl 36¾ and 37 respectively, but declined then in sympathy with our market, and closed this morning at fl 36½ s.c., and fl 36¾ three months, with Banca s.c. at fl 37¼.

Pig Iron.

The value of Scotch pigs in Glasgow after a firm opening at 47s. 7¼d. fell away to 47s. 4d. on Tuesday, and a rally to 47s. 6¼d. was followed by a fresh decline to 47s. 3¼d. The close is stronger at 47s. 5d. s.c sellers and 47s 7d. a month, whilst Hematite has declined from 48s. 1½d. to 48s. 9d., and Middlesbro' has risen from 38s. 6d. to 38s. 6¼d.

Lead.

The flatness of this market has become more pronounced, supply especially of spot lead being plentiful, and demand restricted. We close flat at £10 17s. 6d. to £10 18s. 9d. soft foreign, and £11 2s. 6d. to £11 5s. English.

Spelter

has improved, the demand being moderate, whilst the stocks everywhere seem small. The close is firm at £15 2s. 6d. to £15 5s., ordinaries, and £15 7s. 6d. specials.

Antimony

steady at £30, and a shade firmer in tone.

Quicksilver

unchanged at £7 2s. 6d. firsts, and £7 2s. seconds.

The following are to-night's (March 13) prices of metals:—

	£ s. d.	£ s. d.
Copper.		
Tough cake and ingot	48 0 0	48 10 0
Best selected	49 10 0	50 0 0
Electrolytic Copper	51 10 0	52 0 0
Sheets and sheathing	—	56 0 0
Flat bottoms	—	59 0 0
Chili bars	spot, & 3 months respectively 49 17 6	49 5 0
Good merchantable,		
Copper tubes, seamless	—	0 0 7¾
Alloys.		
BRASS: Wire	—	0 0 5¾
" Tubes (solid drawn)	—	0 0 6¾
" Sheets	—	0 0 6
PHOSPHOR BRONZE: Alloys II.	—	78 0 0
" " III. or Cog Wheel Brand	—	81 0 0
" " VII.	—	83 0 0
" " XI.	—	78 0 0
" " Vulcan brand A1	—	72 0 0
DURO METAL	—	72 0 0
BULL'S METAL	—	65 0 0
Ferrobronze (Vivian's).		
Ingots ...per lb,	0 0 5¾	—
Ordinary sheets, plates, bolts and bars	0 0 6¾	—
Screw bolts and nuts	0 0 8¾	—
Pump rods, plain	0 0 7¾	—
" finished	0 0 10¾	—
DELTA METAL: No. 4 (per ton)	—	—
" Sheets and plates (per lb.)	—	—
" Bars, round, square, flat (per lb.)	—	—
" hexagon (per lb.)	—	—
Tin.		
English, ingots, f.o.b.	84 2 6	84 12 6
" bars	85 2 6	85 12 6
" refined	86 2 6	86 12 6
Straits, spot and 3 months respectively	80 7 6	81 0 0
Australian spot, and three months respectively	80 2 6	81 15 0
Banca " (in Holland)	—	82 1 3
TIN PLATES: Charcoal, best quality ...per box	0 13 6	0 17 0
" " ordinary	0 10 9	0 13 0
" Coke, best quality	0 9 6	0 10 0
" ordinary	0 9 1½	0 9 3

These price of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more.

Iron.		
Pig, G.M.B., f.o.b., Clyde, spot	—	2 7 5
" Scotch pig, No. 1 Gartsherrie	—	2 11 0
" " Coltness	—	2 13 6
" " Clyde	—	2 10 6
" " Govan	—	2 8 6
Bars, Welsh, f.o.b. Wales	—	5 5 0
Plates "	—	6 5 0
Bars, Staffordshire, at works	—	5 7 6
Sheets " "	—	7 1 3
Plates " "	—	6 10 0
Hoops "	—	5 15 0
Ship plates, Middlesborough	—	4 16 3
STEEL: English spring	—	18 0 0
" " cast	23 0 0	52 0 0
" Rails at works, according to section	4 2 6	4 10 0
Lead.		
Spanish or soft foreign	10 17 6	10 18 9
English pig, common	11 2 6	11 5 0
" L.B.	—	11 15 0
" sheet and bar lead	—	12 5 0
" pipe	—	12 15 0
" red	—	14 10 0
" white	—	17 10 0
" patent shot	—	18 0 0
Spelter.		
Silesian ordinary brands	15 2 6	15 5 0
" special brands	—	15 7 6
English Swansea	—	15 17 6
Sheet Zinc	18 2 6	18 5 0
Antimony.		
Antimony	—	30 0 0
Quicksilver.		
Flasks, 75 lbs, warrants	7 2 6	7 2 6
Ore, c.i.f., U.K. ports	per unit.	
Manganese.		
1st quality, 50 per cent. and upwards	0 8 11	0 1 1
2nd " 47 per cent. to 50 per cent.	0 0 10	0 1 0
3rd " 40 " 47 per cent.	0 0 9	0 0 11
Aluminium.		
98-99½ per cent. (guaranteed 97 per cent. min.) in ingots (1 cwt. lots) Per lb.	—	0 1 6½
do do (1 ton lots)	—	0 1 5
Nickel.		
98-99 per cent. guarantee	0 1 2	0 1 3

WESTERN AUSTRALIA'S GOLD OUTPUT.

		Ounces.	
1896 January		16,250	at £62,130
* February		17,922	" £68,104
* Of this amount			
Coolgardie yielded		11,460	" £43,458
Murchison "		4,840	" £18,392
Yilgarn "		1,379	" £5,240

PUBLIC CRUSHING BATTERY, CUE, W.A.—The 20 head stamp battery at Cue, known as Fulton's big battery, is presently in the market. It was completed some time ago, but owing to Mr. Fulton's death—and also, it is understood, from sufficient water supply not having yet been reached—the battery has not started operations.

WE are requested to announce, for the information of the shareholders in the Londonderry Gold Mine (Limited), that the award of the arbitrator in the matter of the arbitration proceedings taken by Mr. R. G. Casey against Colonel North, the Earl of Fingall, and Mr. T. Hewitt Myring, has been received, and that the shareholders will shortly be furnished with details of the respective schemes.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bz*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron; *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver; *R*, Ruby; *S*, Silver; *Sl*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "Amount of Share" column of British Mines signifies that the mine is conducted on "Cost Book" principles; ‡ in the "Head Office" column of African Mines signifies that the address given is not that of the head office, but of a sub, or transfer office; and †, following the names of African Mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share Dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct, we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

AFRICAN MINES.

Name.	Closing Price, Mar. 13, 1896.	Closing Price Mar. 6, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£		£ s. d.			
Abbott's Con. Reefs	⅛ ¾	½ ¾	1 0	—	1 0 0	—	De Kaap	Broad Street Avenue.
Aldler Consolidatd	1⅛ 1¾	1⅛ 1¾	1 0	—	1 0 0	250,000	—	1, Moorgate place.
African Estates	2¾ 2⅜	2¾ 2⅜	1 0	2/& rts Oc.16 95	1 0 0	438,603	,,	3, Copthall-buildings
,, Gold Recvry	1⅛ 1¾	1⅛ 1½	1 0	rts Oct 30 '95	1 0 0	175,000	—	23, College Hill.
Africana	⅝ ¾	11/16 13/16	1 0	—	1 0 0	1,075,000	—	34, Clement's lane
Afrikander G	1⅛ 1⅜	1⅛ 1⅜	1 0	rts May 24 '95	1 0 0	40,000	Transvaal.	23, College Hill
Alexandra Estate G	⅝ ¾	⅝ ¾	1 0	—	1 0 0	225,000	Rand	16, George street
Anglo-French Exp.	4 7/16 4 9/16	4⅝ 4⅜	5 0	15% Aug 29 '95	5 0 0	33,[illegible]	S. Africa	3, Princes street
,, Matabeleland	2⅜ 3	2¾ 3	1 0	—	1 0 0	39,7[illegible]	Matabld.	Winchester House.
Appantoo G	—	—	1 0	—	1 0 0	77,885	West Cost	Dashwood House.
Aurora G	1¼ 1½	1¼ 1½	1 0	5% Mar.,'93	1 0 0	65,000	Rand	8, Old Jewry.‡
,, West United	1 5/16 1 7/16	1¾ 1⅜	1 0	—	1 0 0	100,000	,,	7, Lothbury
Austral-African	1⅝ 1¾	1 11/16 1 13/16	1 0	3/-Dec. 16 '95	1 0 0	250,000	—	Token. Ho., Opthll Av
Balkis Eersteling G	3/- 3/6	3/9 4/3	10/	—	0 10 0	520,000	Transvaal	85, Gracechurch-st.
,, Land	6/6 7/-	6/6 7/	10/	1/ Feb. 13, '96	0 0 0	520,000	,,	,,
Bantjes Consol G	3⅝ 3¾	3⅛ 3⅝	1 0	rts Sep 24 '95	1 0 0	83,000		15, Geo. st., Mn Ho.
Barnato Bank	1⅞ 2	1 13/16 1⅞	1 0	—	1 0 0	2,2[illegible]	—	7, Lothbury
,, Consol	3 1/16 3 3/16	3 3⅛	1 0	—	1 0 0	1,000,000	—	,,
Barrett G	12/ 13/	13/ 14/	10/	—	0 9 0	207,496	De Kaap	17, Basinghall-street
Bechuanaland Exp.	1⅞ 2	1 15/16 2 1/16	1 0	rts Jy 24 '95	1 0 0	400,000	Bechuana.	19, St. Swithin's-lane.
,, Trad'g Assoc.	1⅜ 1⅝	1⅜ 1½	1 0	5 pc Jan 16, 96	1 0 0	100,000	,,	72, Basinghall street
Ben Trovato	9/16 11/16	9/16 11/16	—	—	— 0	—	—	2, Austin Friars.
Big Golden Quarry	1/ 1/6	1/ 1/3	5/-	—	0 5 0	483,226	Kaap Rivr	Warnford Court.
Block "B" Lang.	1 13/16 1 15/16	1 13/16 1 15/16	1 0	—	1 0 0	535,000	Rand	8, Princes-st., E.C.‡
Bonanza	2¾ 3	2¾ 2⅞	1 0	—	1 0 0	2[illegible]0,000	Turffont'n	120, Bishopsgate-st.
Brit. S. A. Char.	4⅞ 5	5 5 1/16	1 0	rts Jy 26 '95	1 0 0	1,999,760	S. Africa	15, St. Swithin's-lane
Buffelsdoorn G	3 9/16 3 11/16	3 9/16 3 11/16	1	16/- Nv. 28 '95	1 0 0	250,000	Potchefstr	7, Lothbury.
,, Central	⅝ ¾	⅝ ¾	1 0	—	1 0 0	—	—	8, Old Jewry
,, Consolidated	11/16 13/16	13/16 15/16	1 0	—	1 0 0	225,000	—	Warnford Court
Cape Asbestos	¾ 1	⅞ 1⅛	1 0	—	1 0 0	50,311	Orange Rv	19, St. Swithin's-lane
,, Copper C	2⅜ 2½	2⅜ 2½	2 0	2/6 Dec.16, '95	2 0 0	300,000	Cape Col.	9, Queen-street-place,
,, 6% Pref.	2⅜ 2⅝	2⅜ 2⅝	2 0	2/6 Dec.16, '95	2 0 0	45,000	,,	,, ,,
Cassel Coal	1 11/16 1 13/16	1 11/16 1 13/16	1 0	7½ pc Mar 27 '96	1 0 0	75,000	Johanbrg.	99, Cannon-street.
Cen. de Kaap	1/3 1/9	1/9 2/3	5/-	—	0 2 6	—	De Kaap	Palmerston Bldgs
,, Roodp't Deep	2⅛ 2¼	2⅛ 2¼	1 0	—	1 0 0	220,000	—	120, Bishopsgate st.
Champ d'Or G	2 2¼	1¾ 2¼ xd	1 0	3/2 Feb. 27 '96	1 0 0	116,016	Rand	8, Old Jewry, E.C.
Charterland G.F	⅞ 1	¾ ⅞	1 0	—	1 0 0	156,000	—	19, S. Swithin's lane
Chimes West	1¼ 1½	1¼ 1⅛	1 0	—	1 0 0	150,000	—	Winchester Ho.
City and Sub. Nw G	4⅝ 4⅞	4¾ 5	4 0	10/- June '95	4 0 0	340,000	Rand	Gresham Ho.
Con. Bultfontein D	32/- 33/-	1½ 1⅝	1 0	9d, Jan. 16 '96	1 0 0	721,500	Griqualnd	62, Lombard-st.
Con. Deep Levels G	5 5⅛	5⅛ 5¾	1 0	4/- Jy 11 '95	1 0 0	187,250	Transvaal	30, St. Swithin's-lane
Con. G. Fields S.A.	13⅛ 13¾	12⅞ 13	1 0	20/ Nov. 14 '95	1 0 0	1,250,000	S. Africa	8, Old Jewry.
Do. 6% Pref.	24/9 25/3	24/9 25/3	1 0	7 1-5d Dc30'95	1 0 0	1,243,999	,,	,,
Do. 5½% Deben.	111 112	110⅜ 111⅛	5 0	5½ Jan. 2 '96	5 0 0	600,000	,,	,,
Crown Deep G	10 11	10 11	1 0	—	1 0 0	250,000	Rand	120, Bishopsgate-st.
,, Reef G	10⅜ 10⅝	10⅛ 10⅜	1 0	10/-Jan. 16 '96	1 0 0	120,000	,,	,,
DeBeers Consol. D	27¾ 27⅞	27⅜ 27⅝	5 0	15/- Jan. 16 '96	5 0 0	789,791	Kimberl'y	62, Lombard-street.
Do. 5% 1st Deb.	109⅛ 110½	109⅝ 110⅛	—	5% Jan. 2 '96	—	£3,500000	,,	,,
Do. 5½% Bul. Ob.	105 107	104⅛ 105⅛	—	5½% Oct. '95		720,000	,,	,,
Doornkop	6/3 6/9	6/3 6/9	1 0		1 0 0	250,000	Doornkop	Warnford Court
Driefontein	2¼ 2⅛	1⅞ 2⅛	1 0	—	1 0 0	175,000	—	Winchester Ho.
Durban Roodept. G	6⅛ 6⅜	6⅛ 6⅜	1 0	3/- Dec. 16 '95	1 0 0	£125,000	Rand	28, Leadenhall-bldgs
,, Deep	3⅞ 4⅛	3⅞ 4⅛	—	—	—	—		
Eastleigh G	1 1⅛	1 1/16 1 3/16	1 0	—	1 0 0	240,000	Klerksdrp	52, Leadenhall Street
East Orion	5/16 7/16	5/16 7/16	1 0	—	1 0 0	275,000	Rand	8, Old Jewry.
,, Rand G	6 7/16 6 9/16	6 5/16 6 9/16	1 0	—	1 0 0	570,000	,,	170, Winchester-ho.
Evelyn G	1 1⅛	1 1⅛	1 0	10% Jan. '89	1 0 0	66,000	,,	28, Old Jewry, E.C.
Exploration	3¾ 4 xd	4 4⅛	1 0	5/- Mar. 12 '96	1 0 0	148,000	S. Africa	30, S. Swithin's-ln.‡
Exploring L & M	1 7/16 1 9/16	1 9/16 1 11/16	1 0	2/ Dec. 16, '95	1 0 0	216,215	,,	19, ,,
Ferreira G	18 19 xd	17 18	1 0	13/ Mar. 12 '96	1 0 0	45,000	Rand	120, Bishopsgt st. Wn‡
Forbes Reef (Nw) G	⅛ ¼	⅛ ¼	1 0	—	1 0 0	105,000	De Kaap	45-6, Leadenhall-st.
Geldenhuis Deep G	6 6⅛	6⅛ 7	1 0	—	1 0 0	265,000	Transvaal.	30, St. Swithin's-lane.
Geldenhuis Est. G	4⅛ 4⅜	3⅞ 4⅛	1 0	8/- Jy 26 '95	1 0 0	187,500	Rand	120, Bishopsgt st. Wn‡
,, Main Reef	1 1/16 1 3/16	1⅛ 1¼	1 0	2/ Feb. 13 96	1 0 0	150,000	,,	Warnford Court, E.C
George Goch G	2 9/16 2 11/16	2 7/16 2 9/16	1 0	—	1 0 0	100,000	,,	Johannesburg.
insberg New G	1⅛ 1⅜	1¼ 1⅜	1 0	—	1 0 0	130,000	Driefon.	Warnford Court, E.C.‡
lencairn G	3¾ 3⅞	3⅞ 3¾	1 0	2/6 Feb. 13 '96	1 0 0	200,000	Rand	2, Drapers-gardens.
ld. Fls. Deep G	9⅞ 10⅛	9⅜ 10	1 0	—	1 0 0	600,000	S. Africa	8, Old Jewry.
.F. of Lydenb'rg	2⅜ 3¼	3 3¼	1 0	—	—	—	Lydenb'rg	7, Lothbury.
, F. of Mashonld.	⅜ ½	⅛ ⅜	1 0	—	1 0 0	200,000	Mashonld.	19, St. Swithin's-ln.
raskop G	5/3 5/9	5/9 6/3	5/-	2½% Mar. '92.	0 5 0	400,000	Lydenburg	2, Tokenhouse Bldgs
riqualand W D	8¼ 8⅛	8¾ 8⅝	10 0	4/ Jan 16, '96	10 0 0	105,700	Transvaal.	62, Lombard-street
Heidelbg. Est. Ex:	1¼ 1⅜	1⅜ 1⅛	1 0	—	—	—	Heidelbg.	
,, Gold	4/6 5/6	4/ 5/	1 0	—	1 0 0	500,000	,,	32, Gt. St. Helen's.
Henderson's Trans	2 9/16 2 11/16	2⅝ 2¾	1 0	—	1 0 0	250,000	Zoutpan.bg	85, Gracechurch st.
Henry Nourse G	5¾ 6	5⅞ 6⅛	1 0	—	1 0 0	100,000	De Kaap	Warnford-court.
Hetty	11/16 13/16	11/16 13/16	1 0	—	1 0 0	110,000	Middlevel.	55, Bishopsgate st Wn
oe's Reef G	3/16 5/16	3/16 5/16	1 0	—	1 0 0	57,404	,,	21, Mincing Lane.
ohannesbrg Invst	3¾ 3⅞	3⅝ 3¾	1 0	20% Oct. '95	1 0 0	650,000	—	7, Lothbury.
,, Pioneer	8¾ 9¼	7¾ 8¾ xd	1 0	12½% Nov. '93	1 0 0	21,000	Rand	Johannesburg.
Jubilee G	8 8⅛	8 8⅛	1 0	6/ Nov. 28 '95	1 0 0	30,000	,,	8, Old Jewry.†
Jumpers G	6¾ 7	6¾ 7	1 0	25% Aug 29 '95	1 0 0	100,000	,,	120, Bishopsgt st, Wn‡
,, Deep	3¼ 3½	3¼ 3½	1 0	—	1 0 0	300,000	,,	30, S. Swithin's lane.
Kimberley D	⅜ ⅛ pm	⅜ ⅛ pm	1 0	2/ Jan 16. '95	0 10 0	98,672	Kimberley	19, Finsbury circus.
,, Rdpt	2⅛ 2⅜	2¼ 2⅜	1 0	—	1 0 0	125,000	,,	2, Drapers-gardens.
Klerksdorp	14/9 15/3	14/9 15/3	10/-	—	0 9 0	400,000	Klerksdorp	110, Cannon St.
Knight's Deep	2¾ 3	2¾ 3	1 0	—	1 0 0	295,194	Rand	8, Old Jewry
Koffyfontein D	1⅛ 1¼	1 1/16 1 3/16	1 0	—	1 0 0	125,000	Jacobsdaal	6, Gt. St. Helen's.
Lancaster	1⅞ 2	1⅞ 2	1 0	—	1 0 0	226,500	Luip. Vlei	120, Bishopsgt st. Wn
Langlaagte Est. G	5⅝ 5⅞	5⅝ 5⅞	1 0	5/ Feb 13 '96	1 0 0	470,000	Rand	59, Holborn Viaduct
,, Royal	2⅜ 2⅝	2⅛ 2¼	1 0	rts. Mar. 6 '95	1 0 0	100,000		2, Drapers-gardens.
,, Star	2 2¼	2¼ 2⅜	1 0	—	1 0 0	170,000	,,	
Lisbon-Berlyn G	6/6 7/	6/3 7/	2/6	—	0 2 6	889,233	Lydenburg	Suffolk House.
on., Paris Fin & M.	1 3/16 1 5/16	1⅛ 1¼	1 0	—	1 0 0	500,000	—	53, Old Broad Street.
ondon & S. A. Ex.	14 14½ xd	13¾ 14¾	10/	4/- Mar. 12 '96	0 10 0	100,000	S. Africa	19, Finsbury-circus.
uipaards Vlei Est.	⅞ 1	⅝ ⅞	1 0	6% Mar. '90	1 0 0	319,003	Rand	Warnford-court.‡
Lydenburg Estate.	1⅜ 1⅝	1⅜ 1¾	1 0	—	1 0 0	190,000	Lydenburg	85, Gracech. Street
,, Ld & Expl	⅛ ⅜	⅛ ⅜	1 0	—	1 0 0	200,000	,,	120, Bishopsgte St.
,, M'g. Est.	5¼ 5⅛	5¼ 5⅛	1 0	—	1 0 0	300,000	,,	,,
Main Reef (New) G	1 1⅛	1 1¼	1 0	—	1 0 0	111,500	Rand	15, George St., MnH
Malmani Gold Syn	3/6 4/6	2/6 3/6	2/6	—	0 2 6	200,000	Transvaal	Throgmorton House.
Marie Louise	2⅞ 3⅛	2⅞ 3⅛	1 0	—	1 0 0	60,000	Rand	15, George St., Mn H
Marievale Nigel	1¼ 1¾	1¼ 1⅜	1 0	—	1 0 0	250,000	,,	,,
Mashon. Agency	2⅞ 3	2 13/16 3 1/16	1 0	—	1 0 0	100,000	Mashonald	8, Old Jewry, E.C.
,, Central	1 1¼	1 3/16 1 5/16	1 0	—	1 0 0	160,000	,,	,,
Matabelel'd G. R'f	4⅜ 4⅝	4⅜ 4⅝	1 0	—	1 0 0	110,000	Matabelel'd	3, Copthall-buildings.
May Con. (New) G	3 3⅛ xd	3 1/16 3 3/16	1 0	2/- Mar. 12 96	1 0 0	236,500	Rand	4, Lothbury.‡
Meyer & Charl. G	5⅛ 5¾	5⅛ 5¾ xd	1 0	5/ Feb. 13 96	1 0 0	75,020	,,	1, Crosby Square.‡
Minerva	1 7/16 1 9/16	1⅛ 1⅝	1 0	—	1 0 0	150,000	,,	Winchester House.
Mines Selection	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	100,000	—	33, Br'd St. Avenue.
Modderfontein G	10⅝ 10⅞	10⅛ 10⅜	1 0	—	1 0 0	200,000	Rand	13, George Street
,, "B" Extensn.	2 7/16 2 9/16	2⅛ 2⅜	—	—	—	—		28, Austin Frias
Molyneux Consoli.	1⅜ 1⅛	1¼ 1⅜	1 0	—	1 0 0	220,000	Modderftn	120, Bishopsgate st
Moodies G	11/16 13/16	11/16 13/16	1 0	-/4 May '90	1 0 0	240,000	,,	Gresham House.‡
Mozambique	1⅜ 1¾	1⅜ 1¾	1 0	—	1 0 0	400,000	S.E. Africa	13, Austin Friars.
Namaqua C	1¼ 1⅛	1 1¼	2 0	2/6 July '91	2 0 0	94,331	Namaquald	34, Leadenhall-blds.
New African	4⅛ 4⅜	4 4⅛	1 0	20/ Dec. 30 '95	1 0 0	190,000	—	83, Hatton Garden.
,, Chimes G	2⅛ 2¼	2⅛ 2¼	1 0	15 pc Aug. '95	1 0 0	100,000	Rand	8, Old Jewry, E.C
,, Clewer Estate	2¼ 2⅜	2¼ 2⅜	1 0	10% Feb. 28 '95	1 0 0	100,000	Lydenburg	120, Bishopsgt st. Wn‡
,, Comet	2¾ 3	2⅜ 2⅝	1 0	—	1 0 0	175,000	Heidelburg	Winchester-house.
,, Crœsus G	1⅜ 1⅞	1⅜ 1⅞	1 0	rts Apr 17 '95	1 0 0	255,000	Langlaagte	120, Bishopsgt. st. Wn
,, Gordon D	8/6 9/	7/9 8/3	1 0	5% Dec. '89	1 0 0	404,344	Griqualand	110, Cannon-street.
,, Heriot G	8¾ 9	8¾ 9	1 0	5/ Feb. 13, '96	1 0 0	88,750	Rand	96, Gresham Ho EC
,, Jagersf. D	10⅜ 10⅛	9⅛ 9⅜	5 0	10/ Oct. 16 '95	5 0 0	100,000	Transvaal.	5, Copthall-buildings
,, Kleinfontein G	3⅜ 3⅜	3⅜ 3⅝	1 0	12½ pc Mar. '95	1 0 0	82,500	Rand	Winchester House
,, Midas	4¼ 4⅛	3¾ 4	1 0	rts. Jan. 16, '96	1 0 0	150,000	Mid'le Vlei	120, Bishopsgt-st. W
,, Primrose G	6 6⅛	6⅞ 6⅛	1 0	5/ Feb. 13, '96	1 0 0	278,750	Rand	2, Draper's-gardens.
,, Rietfontein G	4¼ 4⅜	4 4¼	1 0	—	1 0 0	160,000		Warnford-ct., E.C.
,, S. Augustine D	11/3 11/9	10/ 10/6	1 0	—	0 19 6	299,137	Griqu'ld W	30-1, St. Swithin's-ln
,, Spes Bona G	1⅛ 1⅜	1⅛ 1⅜	1 0	—	1 0 0	113,701	Rand	24, N. John-st., L'pl.
,, Steyn Estate	1 5/16 1 7/16	1 5/16 1 7/16	1 0	—	1 0 0	125,000	Heidelberg	19, Bury Street, E.C.

AFRICAN MINES—(*Continued*).

Name.	Closing Price, Mar. 13, 1896.	Closing Price, Mar. 6, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£					
Nigel G	4¼ 4½	4¼ 4½	1 0	rts Aug 10 '95	1 0 0	160,000	Rand	96, Gresham Ho., EC
,, Deep G	2 1/16 2 3/16	2⅛ 2¼	1 0	—	1 0 0	195,000	Heidelberg	8 Old Jewry.
North Randfontein	1⅝ 1¾	1⅝ 1¾	1 0	—	1 0 0	235,000	—	8, Princes street
Nourse Deep	4⅛ 4¾	4¾ 5¼	1 0	—	1 0 0	375,000	Rand	120, Bishopgt.-st., Wn
Oceana	1⅞ 2	1 15/16 2 1/16	1 0	2/-Nov. 28 '95	1 0 0	357,400	Wtrbg Lyn	13, Austin Friars.
,, Develpmnt	9/16 11/16	11/16 13/16	1 0	—	1 0 0	50,000	Heidebrg.	,,
,, Minerals	15/16 1 1/16	1 1⅛	1 0	—	1 0 0	500,000	,,	,,
Orange F.S.B. D	3¾ 4¼	2⅞ 3 xd	1 0	10% Aug., 95	1 0 0	284,000	OrangeF.S.	10, Moorgate-street.
Orion (New) G	2⅜ 2⅝	2⅜ 2¾	1 0	10% Aug. '95	1 0 0	30,000	Rand	8, Old Jewry.
Paarl Central G	1⅜ 1⅛	1⅜ 1⅛	1 0	—	1 0 0	138,750	Transvaal.	120, Bishopsgt st, Wn
Pardy's Mozambq.	1⅜ 1⅝ xr	1 2	10/	rts Mar 12 '96	0 10 0	13,000	S.E. Africa	Broad St. Avenue.
Piggs Peak G	7/16 9/16	7/16 9/16	1 0	—	0 17 0	200,000	Swaziland.	6, Queen-street-place
Porges Randfontn.	2 2¼	1¾ 2	1 0	2/ Feb. 13 '96	1 0 0	437,500	Rand	1, Bank Buildings
Potchefstroom G	9/16 11/16	11/16 13/16	1 0	—	1 0 0	389,750	Potchefstm	19, Bury-st., E.C.
Princess Estate G	3⅛ 3¼	3 1/16 3 3/16	1 0	—	1 0 0	125,000	Rand	33, Cornhill, E.C.
Rand Central Ore	2⅜ 2⅜	2⅜ 2½	1 0	25 p c Aug. 95	1 0 0	115,000	—	8, Princes-street, E.C.
Randfontein G	2 13/16 2 15/16	2¾ 2⅞	1 0	—	1 0 0	2,000,000	Rand	1, Bank Buildings.
Rand Mines G	28¾ 29¼	27¾ 28¼	1 0	—	1 0 0	332,798	,	120, Bishopsgt st. Wn‡
Rand-Rhodesia Ex	1⅛ 1⅜	1⅜ 1½	1 0	10 p.c. Oct. '95	1 0 0	25,000	R&Rhodesa	123, ,,
Rhodesia Ex & Dv.	8 9	8⅛ 9	1 0	—	1 0 0	50,000	Mt & Mash'l	8, Old Jewry.
Robinson (SA) Bank	6⅛ 7	6⅜ 7	4 0	—	4 0 0	750,000	—	8, Prince's-street
,, Deep	6⅛ 7⅛	5⅝ 7½	1 0	—	1 0 0	500,000	M'nR'fR'nd	120, Bishopsgate st.
,, Diamond	1¾ 1⅞	1½ 1¾	1 0	—	1 0 0	350,000	Kaal Valley	8, Prince's street
,, Gold	9⅛ 9⅜	9¼ 9⅜	5 0	8/ Feb 13 '96	5 0 0	550,000	M. Rf.'rand	28, Austin Friars, E.C
,, Randftn.	1 3/16 1 5/16	⅞ 1	1 0	—	1 0 0	517,000	Rand	8, Prince's-street.
Roodepoort Deep	2⅞ 3	2¾ 2⅞	1 0	—	1 0 0	170,000	,,	8, Old Jewry, E.C.
Roodepoort Un. G	5⅛ 5⅜	5⅛ 5⅜	1 0	5/ Feb 13 '96	1 0 0	130,000	,,	Warnford-court.‡
Rose Deep	4¾ 5¼	4¾ 5¼	1 0	—	1 0 0	300,000	M. Rf.'rand	30-31, S. Switn's. lane.
Rothery Block	8/ 10/	8/ 10/	1 0	—	—	—	—	55, Bishopsgate st,
St. Angelo	4¼ 4⅛	3¼ 3⅛	1 0	—	1 0 0	175,000	—	Winchester House.
Salisbury New	3⅞ 4⅛	4 4⅛	1 0		1 0 0	98,000	Rand	96, Gresham Ho., EC
Sheba G	2⅛ 2¼	2 2⅛	1 0	1/- Sep 28 '94	1 0 0	850,000	Lydenburg	18, S. Helen's place.
Silati G	⅜ ⅜	⅜ ½	1 0	—	0 18 6	119,000	Zoutpan'bg	85, Gracechurch St.
Simmer & Jack G	5 6	5 6	1 0	2/ Aug 14 95	1 0 0	250,000	Rand	8, Old Jewry.
S.A Gold Trust New	8⅛ 8⅝	8¼ 8½ xd	1 C	15/ Feb 27 '96	1 0 0	250,000	S. Africa	,,
South West Rand	5/16 7/16	5/16 7/16	1 0	—	1 0 0	158,000	Rand	Winchester House.
Spitzkop (New) G	15/ 16/	11/16 13/16	1 0	—	1 0 0	99,070	Lydenburg	15, Bishopsgt-st, Wt.
Stanhope G	1 1/16 1 3/16	1⅛ 1¼	1 0	2/- Oct 20 '95	1 0 0	34,000	Rand	96, Gresham Ho., EC
Sutherland R. G	6/ 7/	6/ 7/	1 0	—	1 0 0	220,000	Zoutpan'bg	Dashwood Ho.
Tati Concessions	1 15/16 2 1/16	1 13/16 1 15/16	1 0	rts Jy. 22 '95	1 0 0	392,000	—	Gresham House.
Trans. Coal Trust	1¾ 1⅞	1¾ 1⅞	1 0	1/- Nv 28. 95	1 0 0	439,965	Rand	Broad-st. House, E C
,, Consolidatd	2⅛ 2⅜	2⅛ 2½	1 0	—	1 0 0	485,131	Transvaal	120, Bishopsgte st Wn.
,, Est. & Dev.	1⅛ 1¼	1⅝ 1¾	1 0	—	1 0 0	428,600	,,	10, New Broad-st. E.C.
,, Gen. Assoc.	2¾ 3 xd	3 7/16 3 9/16	1 0	10/-Mar, 12 '96	1 0 0	185,000	—	30, S. Swithn's lane.
,, Gold Exp. G	5¾ 6	5⅞ ⅜	1 0	3/6 Jan. 16 '96	1 0 0	260,000	Transvaal.	Suffolk House, E.C.
,, Gold Fields	3⅜ 4	3¼ 3½	1 0	—	1 0 0	135,000	S. A. R.	120, Bishopsgt.-st. Wn
,, Land	9/16 11/16	⅜ ½	1 0	—	1 0 0	79,915	Transvaal.	33, Cornhill.
Treasury G	3 3¼	3⅛ 3⅜	1 0	12½% Sep.'94	1 0 0	136,000	Rand	Warnford Court.
United Exploratn.	1 1¼	1⅛ 1⅜	1 0	—	1 0 0	250,000	—	120, Bishopsgte St.
Un. Ivy Reef G	13/16 15/16	13/16 15/16	1 0	2½ Jan. '94	1 0 0	45,000	Transvaal.	110, Cannon-street.
U. Langlaagte (N) G	1⅛ 1¾	1⅛ 1⅜	1 0	—	1 0 0	146,000	Rand	85, Gresham Ho., E.C
,, Pioneer	⅜ ⅞	⅝ ⅞	1 0	—	1 0 0	75,000	De Kaap	16, S. Helen's-pl., E.C
,, Rhodsa. G F	15/16 1 1/16	15/16 1 1/16	1 0	—	0 10 0	225,500	Rhodesia	13, George street. EC
Van Ryn G	5⅞ 6⅛	5⅞ 6¼	1 0	4/- Jan. 16 '96	1 0 0	160,000	Rand	18, St. Swithin's-ln.
,, North	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	116,091	—	,,
,, West	3½ 3¼	3½ 3¾	1 0	—	1 0 0	120,000	Rand	,,
Vetterskroon	1⅜ 1⅝	1⅜ 1½	—	—	1 0 0	125,000	Rooderand	8, Old Jewry
Vesta	1⅛ 1¼	1¼ 1⅜	1 0	—	1 0 0	130,000	Rand	Winchester House
Village Main Reef	6⅞ 7⅛	6¾ 6⅛	1 0	—	1 0 0	177,000	,,	8, Old Jewry.
Vogelstruis Estate	3⅛ 3¼	3⅛ 3¾	1 0	—	1 0 0	200,000	,,	Winchester House.
,, Cons. Deep	2⅛ 2⅜	2¼ 2½	1 0	—	1 0 0	327,750	,,	16, Geo. St. Mn. Ho.
Wassau G	¾ ⅞	¾ ⅞	1 0	—	1 0 0	100,000	Gold Coast	147, Cannon-street
Wemmer G	9¾ 10	9⅞ 10⅛	1 0	£1 Feb 13 '96	1 0 0	55,000	Rand	19, Bury-street.‡†
Western Nigel	13/16 15/16	15/16 1 1/16	1 C	—	1 0 0	207,000	Main Reef	Suffolk House.
West Rand G	1⅝ 1¾	1⅝ 1¾	1 0	—	1 0 0	240,000	Rand	13, Geo. St., Mans.Ho.
Willoughby's Con.	2¼ 2⅜	2⅜ 2¼	1 0	—	1 0 0	700,000	Mashonald	3, Copthall-bldgs.
Witwatersrand G	6¾ 7	7⅛ 7⅜	1 0	—	1 0 0	250,000	Rand	19, Bury-st., E.C.
Wolhuter G	7⅞ 8⅛	8⅛ 8⅜	1 0	rts Apr 26 '94	1 0 0	130,000	,,	Warnford-court.†
Worcester G	3⅞ 4⅛ xd	3⅞ 4⅛	1 0	2/-Mar 12 '96	1 0 0	90,727	Rand	8, Old Jewry.‡
Zambesia Explora.	2 13/16 2 15/16	2¾ 3	1 0	—	1 0 0	65,000	Transvaal.	30-31, Clement's lane

BRITISH MINES.

Name.	Closing Price, Mar. 13, 1896.	Closing Price, Mar. 6, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
Basset	1¼ 1⅜	1 1¼	£		£ s. d.			
Blue Hills CT	1/ 2/	⅛ ¼	*	2/- May, '81	6 19 5	5,353	Cornwall	Camborne.
Carn Brea T	‡16/ 18/	16/6 17/6	*	2/6 Dec., '93	22 8 5	6,000	Cornwall	Carn Brea.
Cook's Kitchen T	—	¼ ⅜	*	—	35 15 10	4,900	,,	Camborne.
Devon Gawton CA	15/ 20/	15/ 20/	1 0	—	0 12 6	25,000	Tavistock	8, Finsbury circus,
,, Gt Cons. CA	20/ 21/	1⅛ 1¾	5 0	1/6 May '95	2 0 0	10,240	Devon	,,
Dolcoath T	15/6 16/6	13/6 14/6	1 0	—	1 0 0	188,000	Cornwall	Camborne.
,,	4/ 5/	3/6 4/6	1 0	—	0 5 0	25,000	,,	,,
Drakewalls CTM	/6 /9	/6 1/	5/	—	0 2 0	61,856	,,	Dashwood House.
East Halkyn	—	20/ 25/	1 0	—	0 2 6	12,000	Flintshire	67, Lord St., Liverpl.
,, Pool AT	2⅛ 2⅜	2¼ 2⅜	*	1/6 Sept, '94	0 9 9	6,400	Cornwall	Illogan.
Great Laxey L	1¾ 1⅞	1¾ 2¼	4 0	5/- Apr., '92	4 0 0	15,000	I. of Man	Douglas, Isle of Man.
Green Hurth L	1/6	1/6	1 0	-/6 June '89	0 19 0	1,000	Cmberlnd	Newcastle.
Halkyn L	—	9 10	1 0	8/- Mar. '96	1 0 0	10,000	Flintshire	Chester.
Do. Dis. Mn. Drain	—	10 11	10 0	5% Aug. '95	10 0 0	10,000	,,	Corn Ex. Cmb, Chestr.
Isle of Man L	—	3¾ 4¼	5 0	7½% Mar.'96	5 0 0	14,000	I. of Man	Chester.
Killifreth T	6/ 7/	5/6 6/6	*	1/6 Nov., '94	5 15 6	6,000	Cornwall	Truro.
Leadhills L	1 1⅛	1 1⅛	6 0	1/- Oct. 16 '95	6 0 0	20,000	Lanarksh.	30, Finsbury-circus.
Llanarmon	par	par	1 0	—	1 0 0	21,990	Denbigh	8, Werburgh Chmbrs Chester.
,,	par	par	1 0	—	0 15 0	3,790	Flintshire	
Levant CT	4 4⅛	3 4	*	4/- Nov., '94	11 9 6	2,500	Cornwall	Penzance.
Nenthd&Tndle. LZ	1/6	1/6	1 0	6% Feb., '91	0 18 0	48,805	Nthumbld.	Newcastle-on-Tyne.
Polberro T	⅛ ⅝	⅜ ⅞	*	—	2 1 5	18,000	S. Agnes, Cl.	37, Walbrook.
Rhosemor L	par	par	1 0	10 p c Sept. 91	1 0 0	1,000	Flintshire	Corn Ex. Cmb. Chestr.
So. Condurrow TC	—	1/6 2/6	*	3/6 Apr. '93	7 17 6	6,123	Cornwall	20, Great St. Helens
,, Crofty TA	1/ 2/	1/ 2/	*	—	17 10 6	5,769	,,	Pool, Cornwall.
S. Frances Untd. T	—	9/ 10/	*	—	2 7 6	6,000	,,	Redruth.
,, Halkyn	par	par	1 0	—	1 0 0	10,000	Flintshire	8, Werburgh Chmbrs
Talacre	par	par	1 0	—	0 16 0	20,000	,,	84, Forgate st., Chstr
Tincroft T	1⅛ 1¾	31/6 32/6	*	2/- Aug. '94	15 7 6	6,000	Cornwall	Carn Brea.
Weardale L	8/9	8/9	4 0	1/3 Oct. '90	1 10 0	60,000	Durham	3, Lombard-court.
West Frances T	—	1/6 2/6	—	2/6 May, '89	17 1 7	6,144	Cornwall	Camborne.
,, Kitty T	2 2⅛	2⅜ 2⅝	*	2/- Dec, '94	1 2 0	6,000	,,	37, Walbrook.
Wheal Agar TA	1/ 2/	5/ 6/	*	2/6 Aug. '88	23 15 2	6,000	,,	Redruth.
,, Basset TC	—	1⅛ 1⅜	*	10/- Apr.'88	12 3 0	6,144	,,	
,, Friendly T	1/ 1/6	/9 1/3	*	—	0 12 9	10,000	,,	2, Copthall Bldgs. E.C
,, Grenville T	6 7	5⅞ 6⅛	*	3/- Nov 28 '95	18 2 0	6,000	,,	7, Union-court, E.C.
,, Kitty T	1/ 2/	2/ 3/	*	3/- Mar. '88	4 5 6	6,590	,,	Truro.
,, Metal &F. T	3/ 3/6	3/ 3/6	*	—	0 3 0	60,000	,,	14, Broad-street Av.

EUROPEAN MINES.

Name.	Closing Price, Mar. 13, 1896.	Closing Price, Mar. 6, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
Alamillos L	1 1¼	⅞ 1⅛	£ 2 0	1/6 Oct. 16 '95	2 0 0	35,000	Spain	8, Queen-street-place
Consett Ore	6¾ 6⅛	6¾ 6⅛	1 0	5/- July 94	1 0 0	55,280	Spain	19, Grey-st, N'castle.
Fortuna L	1⅛ 1⅜	1 1⅛	2 0	-/6 Oct. 16 '95	2 0 0	25,000	Spain	,,
Libiola C	3 3¼	3 3½	5 0	2/- Sept. 27 95	5 0 0	50,400	Italy	Dashwood Ho., E.C.
Linares L	5 5⅛	5 5⅛	3 0	7/- Oct. 16 '95	3 0 0	14,998	Spain	6, Queen-street-place.
Mason & Barry C	2⅞ 3⅛	2¾ 3	5 0	2/ May 23 '94	5 0 0	185,172	Portugal	87, Cannon-street.
Pestarena G	6/ 7/	6/ 7/	3 0	—	3 0 0	67,809	Italy	6-7, Queen-street-pl.
Pontgibaud SL	—	—	20 0	11/6 Dec. '94	20 0 0	14,000	Coueron	
Rio Tinto C	18 18¼	18 13/16 18 15/16	10 0	10/- Oct. 30 '95	10 0 0	325,000	Spain	30, St. Swithin's-lane
,, (1st Mrt. Bds)	101 103	100 102	100 0	4% Jan. 2, '96	100 0 0	£3600,000	,,	,,
Ripanji SQ	—	—	1 0	—	0 19 0	95,000	Servia	120, Bishopsgt-st, Wal
Tharsis C Sul	5 5¼	5 5¼	2 0	4/- Apr 26 '95	2 0 0	625,000	Spain	Glasgow.
West Prus Pre. pref	—	—	10 0	6% Dec. 95	10 0 0	365	Germany	Walbrook Ho., E.C.
,, Prussian Pre.	—	—	10 0	8% Dec. '95	10 0 0	5,460	,,	,,
,, Prussian Or.	—	—	10 0	4%, Dec. '95	10 0 0	14,050	,,	
Wohlfahrt L	—	—	1 0	3% Dec. '94	1 0 0	99,634	Prussia	17, Victoria-st., S.W
,,	—	—	1 0	3% Dec. '94	0 10 0	9,090	,,	,,

"THE MINING JOURNAL" SHARE LIST—(Continued)

AUSTRALIAN AND NEW ZEALAND MINES.

Name.	Closing Price. Mar.13,1896.	Closing Price. Mar. 6, 1896.	Am't. of Share	When last XD and Dividend.	Called up per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
Abbotts(2/6pm.pd.)G	7/16 9/16	7/16 9/16	£1 0	—	£0 15 0	57,000	Murch.WA	139, Cannon-street
Achilles Gld. Fld.	2/9 3/3	2/9 3/3	2/6	—	0 2 6	642,456	Otago, N.Z	11, Poultry.
Aladdins Lamp G	1⅜ 1⅝	1⅜ 1⅝	1 0	1/ Feb. 13 '96	1 0 0	100,000	B'knN S.W	4-6, Throg. Avenue.
Anglo-French Exp	1⅛ 1⅜ pm	1⅛ 1⅜ pm	1 0	5/- Oct 30 '95	0 10 0	40,000	W. Austral	79, Queen Street.
Anglo-Ger.Explor.	1⅛ 1⅜ pm	1⅛ 1⅜ pm	1 0	5/ Oct. 30 '95	0 10 0	50,000	,,	,,
Arrow BrownhillG	⅝ ⅞	⅝ ⅞	1 0	—	1 0 0	90,007	Cool.,W.A.	4, Gt. Winchester St.
Assoc. Gold Mines	2⅛ 2¼	2 3/16 2 5/16	1 0	—	1 0 0	375,000	,,	20, Bucklersbury
Australasian ......G	4/ 5/	4/ 4/6	1 0	-/3 Mar., '92	1 0 0	10,000	Gymp.Q'ld	6, Queen-st. place
Australian C	—	—	20 0	-/9 Aug. '95	7 7 6	218,315	S. Austral.	42, New Broad-street
Aus.Bro. Hill Con.	1/6 2/	1/9 2/	1 0	1/- June, '91	1 0 0	23,708	BarR.NSW	Winchester House.
Baker's Creek ...G	½ ¾	½ ¾	1 0	1/- May '95	0 17 6	500,000	H'gveNSW	Hillgrove, N.S.Wale.
Bardoc............G	¾ 1	¾ 1	1 0	—	1 0 0	165,000	W. Austral	43, Threadneedle st.
Bayley's Reward G	4/6 5/6	4/6 5/6	1 0	-/4 Dec. 94	1 0 0	480,000	Coolgardie	Feb'y. H. Bl'mf'ld St.
Big Blow ....G	7/16 9/16	7/16 9/16	1 0	—	1 0 0	150,000	,,	15, Cannon Street.
Blackett's Claim G	⅜ ⅝	⅛ ⅜	1 0	—	1 0 0	55,000	,,	16, St. Helen's Place.
Black Flag Consld.	1⅜ 1⅝	1 9/16 1 11/16	1 0	—	—	—	W. Austral	4, Bishopsgate St. Wn
,, Propty.	⅜ ⅝	13/16 15/16	1 0	—	1 0 0	140,000	Coolgardie	1, Metal Exch. Bldgs
Blagroves Freehld	4/3 4/9	4/3 4/9	2/6	—	0 2 6	500,000	Corom. N.Z	Dashwood House.
Bonnie Dundee G	5/ 6/	5/6 6/6	1 0	—	0 18 6	120,000	C. T.Q'land	16, S. Helen's Place
Brilliant...........G	13/16 15/16	13/16 15/16	2 0	-/3 Feb 18, '96	2 0 0	250,000	,,	Charters Towers.
,, Block...G	1¼ 1⅜	1 5/16 1 7/16	1 0	-/6 Dec 16 '95	1 0 0	70,000	,,	16, S. Helen's Place
,, St.Geo.G	1 13/16 1 15/16	1⅞ 2	10/	1/ Jan 16 '96	0 10 0	72,000	,,	Charters Towers.
Brit. Brok. Hill S	13/ 14/	13/ 14/	1 0	—	1 0 0	240,000	N.S. Wales	Dashwood Ho., E.C.
Britons United.. G	⅜ ⅝	⅝ ⅞	1 0	—	1 0 0	95,000	Coolgardie	57, Moorgate Street
Broad Arrow	2/9 3/3	3/ 3/6	5/	—	0 4 6	100,000	W.Feather	,,
Broken Hill Prop.S	2⅛ 2⅜	52/ 53/ xd	8/	1/- Feb 27 '96	0 8 0	960,000	N. S.Wales	3, Gt. Winchester st.
Brookman Bros....	⅝ ¾	1⅛ 1⅜	1 0	—	1 0 0	90,000	Han, W.A	53, Coleman Street.
Brownhill Prouty.	13/16 15/16	13/16 15/16	1 0	—	1 0 0	125,000	,,	4, Gt. Winchester st
Burbank sBirthd'y	1¼ 1⅜	1¼ 1⅜	1 0	—	1 0 0	160,000	Coolgardie	Copthall House.
Caledonian ......G	2/ 3/	2/6 3/6	1 0	—	—	120,000	W. Austral	Portland House.
Cassidy Hill ......G	1¼ 1⅜	1 5/16 1 7/16	1 0	—	1 0 0	115,000	Coolgardie	35, New Broad Street
Central Boulder G	11/16 13/16	1 1⅛	1 0	—	1 0 0	93,522	K'lg'rl.WA	Wer'st'r Ho., Walbr'k
,, Exp. & Invest.	1/16 dis 1/16 xd	1/16 dis 1/16 pm	1 0	4/8 Mar 12, '96	—	—	W. Austral	1, Met. Exchg. Bldgs
,, ,, of W.A.	1⅜ 1⅝	1 3/16 1 5/16	1 0	—	1 0 0	122,000	W. Austral	2, ,,
Chaffers	3/ 3/6	2/6 3/6	4/	—	0 4 0	300,000	K'lg'rl.WA	54, Old Broad-st., E.C
Charters Tow. ...G	/6 1/	1/ 1/6	10/	—	0 9 6	200,000	Queensland	110, Cannon Street
,, Consolid....	/6 1/	/6 1/	10/	—	0 9 6	300,000	,,	11, ,,
Colonial Finance...	4¼ 4¾ pm	4¼ 4¾pm	1 0	rts Oct 19 '95	0 10 0	21,140	W. Austral	139 ,,
,, Gold Fields	11/16 13/16pm	⅞ 1 pm	1 0	—	0 12 6	75,250	,,	79, Cornhill.
Con. G. M. of W.A.	1/16 3/16	⅛ ⅜	1 0	—	1 0 0	246,779	Pilbarra ...	30, Moorgate Street.
,, Murchison ...	⅝ ¾	⅝ ¾	1 0	—	1 0 0	225,533	Murc.,W A	Broad Street House.
Consuello ....G	⅛ dis par	⅝ ⅞	1 0	—	1 0 0	90,000	Cool , W A	Bishopsgate House.
Contl. & W.A. Trust	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	104,467	W. Austral	Broad Street House.
Coolgardie Gold ...	13/16 15/16	13/16 15/16	10/	1/ Feb. 16 '95	0 5 0	90,000	Cool.W.A.	Broad Street Avenue.
,, Mining G	1/ 2/	1/ 1/6	2/	—	0 1 0	400,000	Coolgardie	Winchester House.
,, Mint & 1.Kg.	11/16 13/16	11/16 13/16	1 0	—	1 0 0	150,000	,,	30, S. Swithin's ln.
Craven' Cal. ...G	1/ 2/	1/0 2/	6/	-/3 June 94	0 4 8	100,000	Queensland	30-1, S. Swithin's-ln.
Croesus So. United	⅞ 1	¾		—	1 0 0	115,000	Hann'sWA	Blomfield House
Crown United......	1/16 3/16 pm	⅛ ⅜ pm	1 0	—	1 0 0	75,000	—	110, Cannon-st., E.C.
Cumbrland (New)G	/9 1/3	1/ 1/6	1 0	2/6 Dec, '87	0 19 0	184,890	Queensland	Blomfield House.E C
DayDawn B.&W.G	11/6 12/6xd	12/3 12/9	1 0	-/6 Mar 12 '96	1 0 0	498,400	,,	16, S. Helen's Place
,, P.C. G	3/3 3/9	3/3 3/9	1 0	-/6 Apr, '92	1 0 0	490,000	,,	Winchester Ho.. E C
Eaglehawk.........G	1/6 2/6	1/ 2/	1 0	—	0 18 0	120,000	Victoria ...	30-31, S. Swithin's ln
Eagle's Nest	par ¼ pm	par ¼ pm	1 0	—	1 0 0	72,500	Mt.Margrt	Finsbury House.
Emerald Reward...	1/16 ⅜	1/16 ⅜	1 0	—	1 0 0	38,139	Murc. WA	Gresham House.
Emperor ....G	⅛ ⅜	⅛ ⅜	1 0	—	1 0 0	65,000	,,	Finsbury House, E.C
Empress Coolge. G	½ ⅝	⅜ ⅝	1 0	—	0 10 0	90,000	Coolg-rdie	2, Tokenhouse bldgs
Explorers Synd. ...	5/16 7/16 pm	5/16 7/16 pm	1 0	—	0 5 0	9,000	W.Austral	Copthall House
Fingall R'fs. Extd	9/16 11/16	9/16 11/16	1 0	1/4 Jan. 16 '96	1 0 0	15?,000	,,	4, Sun Court
Florence............G	1⅝ 1⅞	1 11/16 1 13/16	1 0	—	1 0 0	60,000	,,	18, St. Swithin's ln
Gibraltar Cons......	15/16 1 1/16	1 1/16 1 3/16	1 0	—	1 0 0	300,000	N S Wales	6, Queen street-place
Gladiator ....G	⅝ ¾	⅝ ¾	1 0	—	1 0 0	—	W. Austral	43, Threadneedle st
Glenrock ....G	1/9 2/3	1/9 2/	1 0	—	0 8 0	225,000	N. Zealand	3-5, Queen-st. E.C.
Golconda ....G	7/16 9/16	¼ ⅜	1 0	—	1 0 0	68,086	Murchison	Winchester House
Golden Cement G	1/16 3/16 pm	1/16 3/16pm	1 0	—	0 10 0	—	W.Austral	79, Queen Street, E.C.
,, Crown....G	1⅜ 1⅝	1 9/16 1 11/16	1 0	—	1 0 0	100,000	,,	77, Bishopsgate-st.
,, Gate.....G	/6 1/6	1/ 1/6	10/	—	0 10 0	150,000	Queensland	9, Tokenhouse Yard
,, Horse Shoe...	¾ 1	¾ 1	1 0	—	1 0 0	—	W.Austral	13, Helen's Place
,, Link ......G	⅝ ⅞	¾ 1	1 0	5/- Oct 30 '95	1 0 0	90,000	,,	Dashwood House
,, Plum......G	1⅜ 1⅝	1 9/16 1 11/16	1 0	—	1 0 0	120,000	,,	4, Bishopsgate Street
Gold Estates........	2⅜ 2⅝	2⅜ 2⅝	1 0	3/ Dec 30 '95	1 0 0	60,000	,,	42, Gresham House.
Great Boulder ...G	6⅛ 6⅜	6 6¼	1 0	2/- Dec 16 '95	1 0 0	240,000	Yilgarn ..	3, Gracechurch st.
,, ,, Junction	1⅜ 1⅝	1⅜ 1⅝	—	—	—	—	,,	Worc. Ho., Walbrook
,, ,, M'n k'fs	⅞ 1	⅞ 1	10/	—	0 10 0	240,000	—	3, Princes Street.
,, Fingall Rfs.	1 1/16 1 3/16	13/16 15/16	1 0	5% Jan. 16, 96	1 0 0	175,000	Kurnalpi	Broad Street House
Gresham Synd. ..	1 1/16 1 3/16pm	1 1¼ pm	1 0	4/- Oct 30 '95	1 0 0	60,000	W. Austral	13-14, Abchurch ln.
Hainault	1½ 1¾	1⅛ 1⅜	—	—	—	—	—	87, Gordon st, Glas.
HamptonGold Flds	⅛dis ⅛ pm	⅛dis ⅛pm	1 0	—	0 10 0	—	—	9, S. Mildred's Ct.
,, GoldHill	1/3 1/9	1/9 2/3	1 0	—	—	—	—	93-94, Gracechurch st
,, Plains...	3 13/16 4 1/16	3 13/16 4 1/16	1 0	—	1 0 0	300,000	Cool. W.A.	29, S. Swithin's lane
,, PlainsEx	8/6 9/6	8/6 9/6	1 0	—	0 18 0	180,000	,,	Suffolk House, E.C.
Hannan's BrwnHill	6¼ 6¾	6 6¾	1 0	—	1 0 0	65,000	,,	Broad Street House.
,, Main Reef...	7/16 9/16	⅜ ⅝	10/	—	0 10 0	—	Kalg W.A.	18, St. Swithin's ln.
,, North.........	1⅛ 1⅜	1⅛ 1⅜	1 0	—	1 0 0	51,107	,,	
,, 100 Acre......	¾ 1	¾ 1	1 0	—	—	—	,,	Dashwood House.
,, Oroya.........	15/16 1 1/16	⅞ 1⅛	1 0	—	1 0 0	—	,,	20, Bucklersbury
,, Prop..........	1 9/16 1 11/16	1⅛ 1⅜	1 0	—	0 10 0	—	,,	139, Cannon Street.
,, Reward... G	3 9/16 3 11/16	3⅜ 3⅝	1 0	—	1 0 0	70,000	Hann.W A	Bartholomew Ho.
,, Star...........	11/16 13/16	1⅛ 1⅜	1 0	—	1 0 0	—	E.Coolgde.	Finsbury HouseE.C
Hauraki.............G	16/6 17/6	16/6 17/	2/6	1/ Mar. 27 '96	0 2 6	250,000	Coromndl.	Dashwood Ho.; E.C
Hawk's View	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	40,000	W. Austral	20, St. Swithin's ln.
Hit or Miss..........	1 9/16 1 11/16	1 7/16 1 9/16	1 0	—	1 0 0	120,000	Cool.,W.A.	1, Queen Vic. St.
Idaho ....GS	5/6 6/	5/9 6/3	10/	-/6 Jan. 16 '96	0 5 0	143,439	W. Austral	Copthall House.
Isaboonga ....G	1/9 2/3	2/ 2/6	10/	—	0 9 9	249,250	Queensland	70-71, Bishopsgate st
Kalgurli..............	1⅜ 1⅝	1⅜ 1⅝	1 0	—	1 0 0	34,000	W. Austral	10, Threadneedle-st
Kapanga.............G	9/9 10/3	9/9 10/3	1 0	rts May 24 '95	0 19 6	249,780	N.Zealand	9, New Broad-street.
Kinsella ....G	8/6 9/6	5/16 7/16	1 0	—	1 0 0	80,000	Murchison	33, Broad-st. Avenue
Kintore ....G	11/16 13/16 pm	11/16 13/16pm	1 0	—	1 0 0	50,000	W. Austral	13, Abchurch lane.
Komata Reefs	5/ 5/6	5/3 5/9	5/-	—	0 5 0	—	Ha'raki,NZ	Dashwood House.
Kurnalpi.............G	¼ ⅜	¼ ⅜	1 0	—	—	—	Coolgardie	Throgmorton House
Lady Loch............	2 11/16 2 13/16	2 11/16 2 13/16	1 0	—	1 0 0	70,000	,,	9, Tokenhouse Yard,
,, Mary Amalg.	1⅜ 1⅝	1⅛ 1⅜	1 0	—	1 0 0	46,000	Murchison	Finsbury House.
,, Shenton	2 5/16 2 9/16	2 5/16 2 7/16	1 0	—	1 0 0	—	—	
LakeView& E.Bldr	3 3⅛	2⅝ 2⅞	10/	-/6 Jan. 2 '95	0 7 6	—	—	18, St. Swithin's ln
Lindsay	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	65,000	Coolgardie	Copthall House
Ln. & Con. Invest.	⅛ ⅜ pm	⅛ ⅜ pm	1 0	—	1 0 0	500,000	W. Austral	79, Queen Street.
Lon. & Globe Fin.	2 7/16 2 9/16	2⅜ 2⅝	1 0	2/ Jan. 16 '96	0 15 0	—	,,	15, Austin Friars.
Londonderry..... G	6/6 7/6	6/6 7/6	1 0	—	1 0 0	467,000	,,	3, Gracechurch-st.
L&W. Aust. Expl.	1⅞ 2	1⅞ 2	1 0	4/-Nov 29 '94	1 0 0	270,100	,,	Broad Street Ho.
Lon., W. A. Invest.	2⅜ 2⅝	2 7/16 2 9/16	1 0	4/ Oct 16 '95	1 0 0	100,000	,,	,,
Mainland Cons. G	2 5/16 2 7/16	2⅞ 3⅛	1 0	—	1 0 0	150,000	Murchison	54 Old Broad Street
Mallina Gold	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	89,000	W. Austral	43, W. Geo. St., G as
Mawson'sRewrd. G	⅜ ⅝	7/16 9/16	1 0	—	1 0 0	60,000	,,	28 & 29,S Swithin's ln
Menzies Gold Est.	13/16 15/16	⅞ 1	1 0	—	1 0 0	—	,,	Broad Street House
,, Gold Reef	1⅜ 1⅝	1 7/16 1 9/16	1 0	—	1 0 0	175,000	,,	29a, Old Broad Stree
,, (O'Driscoll)	1⅛ 1⅜	1 3/16 1 5/16	1 0	—	1 0 0	—	,,	16, Tokenhouse Yard
Mills' Day DawnG	15/16 1 1/16	1 1⅛	1 0	-/6 Aug 29 '95	0 15 6	300,000	Queensland	16, S. Helen's Place
Mosman ....G	4/6 5/6	5/ 6/6	1 0	—	0 19 0	135,000	N.S Wales	Bishopsgate House
Mount Lyell.........	6 6¼	6⅛ 6⅜	3 0	—	3 0 0	300,000	Tasmania	Finsbury House
Mount Margaret...	2⅛ 2¼	2 2¼	1 0	—	1 0 0	—	W. Austral	28, St. Swithin's ln.
,, Morgan G	2 15/16 3 1/16 xd	2 15/16 3 1/16 xd	1 0	-/6 Mar 12, '96	0 17 6	1,000,000	Queensland	9, Gracechurch-st.
Murchison Gift ...	1/16 ⅛	1/16 ⅛	10/	—	0 10 0	100,000	Murc.W.A.	11, Q.Victoria-st, S.W
,, Gold ...	6/9 7/3	6/9 7/	5/	—	0 5 0	400,000	,,	Winchester House.
,, N. Ch'm	5/16 7/16	⅜ ½	1 0	1/- Oct 30 '95	1 0 0	160,000		23, College Hill.
N'wHauraki Props	6/ 6/6	6/ 6/3	5/	—	0 5 0	200,000	Ha'raki,NZ	Dashwood House.
,, Queen ......G	5/6 6/6	6/ 7/	1 0	-/6 Sep 12 '95	0 19 6	160,915	Queensland	30, St. Swithin's-la.
North Boulder......	5/9 6/3	5/6 6/6	10/-	—	0 10 0	—	W. Austral	12, Helen's Place
,, Coolgardie ..	1/6 2/	1/6 2/6	5/	—	0 4 0	400,000	Pilbarra ...	226, Winchester Ho.
,, Fingall Reefs	⅜ ⅝	⅜ ⅝	1 0	—	0 15 0	—	Cool., W A	16, S. Swithin's lane
,, Kalgurli	¾ 1	1⅛ 1⅜	1 0	—	1 0 0	—	—	11, Abchurch lane
,, Q'ld.Agency	13/16 15/16	13/16 15/16	1 0	30% Aug. '95	1 0 0	90,000	Queensland	10, New Broad Street
Omnium G M Assoc	¾ 1	¾ 1	—	—	—	80,000	—	Broad-street House
Paddington Cons.	1¼ 1⅜	1 3/16 1 5/16	—	—	—	—	—	77, Bishopsgate-st.
Pilbarra G. F.	1⅛ 1¼	1 3/16 1 5/16	1 0	—	1 0 0	100,000	Pilb, W. A	38, Coleman-street.
Ramage Syndicate	4⅜ 4⅝	4¼ 4¾ pm	1 0	£2&rts F.13 96	1 0 0	50,000	W. Austra.	4, Bishopsgate-st.
Royal Oak	3/ 3/6	3/ 3/6	5/	—	0 3 0	200,000	N. Zealand	Dashwood House.
,, Sovereign ...	1¼ 1⅜	1¼ 1⅜	1 0	—	1 0 0	60,000	Coolgardie	8, Old Jewry, E.C.
ScottishAustralian	⅜ ⅝	¼ ⅜	1 0	-/3 Aug., '95	1 10 0	200,000	N. S. Wales	Winchester Ho. E.C.
Scotty's Hauraki...	3/ 3/6	3/3 3/9	5/-	—	0 2 0	400,000	N. Zealand	5, Drapers gardens
South Kalgurli ...	⅝ ⅞	⅝ ⅞	1 0	—	1 0 0	60,000	W. Austral	20, Great Win. St.
So. Londonderry...	2/ 3/	2/ 3/	1 0	—	0 19 0	200,000	Cool. W. A	2, Bucklersbury.
Stray Shot & Excl	¾ 1	⅞ 1⅛	1 0	—	1 10 0	—	Pilb., W A	20, S. Swithin's lane.
Taweru..............	4/ 5/	4/ 5/	10/	—	0 5 0	90,000	N.Zealand	Dashwood House.
Tokatea of Hauraki	2/ 2/6	2/3 2/9	5/	—	0 3 0	—	,,	63, New Broad St.
Town Prop. of W A	1 1⅛	1⅛ 1⅜	1 0	—	0 15 0	250,000	W. Austral	28-9, S. Swithin's-ln
True Blue	1⅜ 1⅝	1⅜ 1⅝	1 0	—	1 0 0	—	,,	Dashwood House.
Victoria Associatn	—	—	1 0	-/3 Feb, '96	1 0 0	144,000	Chr. Tow.	6, Crosby-square
Victory...............G	3/16 5/16	3/16 5/16	5/	-/2 May, '94	0 5 0	40,000	Queensland	34, Gresham-st. E.
Waihi..................G	5⅞ 6⅛ xd	6⅜ 6⅛	5/	2/- Mar 12, '96	1 0 0	131,000	N. Zealand	11, Abchurch-ln. E.C
,, Silverton ...	3 13/16 3 15/16	3⅞ 4	1 0	—	1 0 0	60,000	,,	23, College Hill
Waitekauri	4¼ 4⅜	4 9/16 4 13/16	1 0	—	1 0 0	106,000	,,	
,, Extended ...	7/16 ⅝	9/ 10/	10/	—	0 10 0	130,000	,,	63, New Broad St.
Wealth..............G	8/6 9/6	8/6 9/6	10/	—	0 10 0	100,000	Crydn,N Z	43, Threadneedle st
Water Trust Min.	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	120,000	W. Austral	Broad Street House
W. of Nations......	1⅛ 1⅜	1 3/16 1 5/16	1 0	—	0 15 0	—	—	77, Bishopsgate-st.
Wentworth ......G	1 5/16 1⅝	1 11/16 1 13/16	1 0	2/- Dec 16 '95	1 0 0	600,000	N. S Wales	4-6, Throgmort. Av.
W. Aust. G.Conces	1 13/16 2 1/16	1⅞ 2⅛	1 0	2/ Sept 27 '95	1 0 0	£255,000	W. Austral	33, Old Broad st., EC
W. A. Ex. & Fin.	3 3/16 3 7/16	3⅜ 3⅝	1 0	5/- Jan 16 '96	1 0 0	200,000	,,	54, ,,

AUSTRALIAN AND NEW ZEALAND MINES—(*Continued*).

Name	Closing Price. Mar.13,1896	Closing Price. Mar. 6, 1896.	Am't. of Share	When last XD and Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
W. A. General......	4⅝ 4⅞	4½ 4¾pm	1 0	—	0 14 0	—	W. Austral	28, St. Swithin's-ln.
,, Australian G.F.	6 15/16 7 1/16xr	6¾ 7	1 0	rts Mar 12 '96	1 0 0	65,000	Coolgardie	28-29,
,, ,, Mines Dvl	1¾ 2¼pm	1¾ 2¼ pm	1 0	10/ Oct 30, 95	1 0 0	40,000	W. Austral	3, Princes Street
,, Aust. Mining	9/3 9/9	9/6 10/6	5/	/5 Oct 16 95	0 5 0	320,000	,,	257, Winchester Ho,
,, Aust. Pioneer.	1⅞ 2⅛pm	2⅛ 2⅜pm	1 0	rts Oct 19 95	0 15 0	19,993	,,	139, Cannon-street.
,, ,, Share Corp.	7/16 9/16pm	¼ ⅜ pm	1 0	—	0 5 0	200,000	,,	28, St. Swithin's ln
,, ,, Trust	—	¼ dis par	1 0	—	1 0 0	50,000	,,	54, Old Broad Street
,, ,, Venture......	2⅝ 2¾pm	2¾ 3⅛ pm	1 0	15/ Oct. 30 '95	1 0 0	—	,,	2, Princes Street.
West Boulder	11/16 13/16	11/16 13/16	—	—	—	—	—	
Westralia	1 1⅛	15/16 1 1/16	1 0	—	1 0 0	—	—	Winchester House.
White Feather ...	2⅛ 2⅜	2⅜ 2⅝	1 0	—	1 0 0	60,000	Coolgardie	28 & 29,S. Swithin's ln
,, ,, United	⅜ ⅝	⅝ ⅞	1 0	—	1 0 0	75,000	,,	139, Cannon-street
Whitebe'd&Sultan	⅛ dis par	⅛dis par	1 0	—	0 5 0	150,000	,,	13, Abchurch-lane.
Zapopan............G	5/ 6/	5/9 6/3	0	—	1 0 0	25,000	N W Austra	70, Bishopsgate-street
Zeehan Montana S	—	—	1 0	-/4 Dec. 95	1 0 0	66,000	Tasmania	11, Queen Victoria st
,, ,, ...	—	—	1 0	2½ Dec. 95	0 2 6	12,000	,,	,,

NORTH AMERICAN MINES.

Name	Closing Price. Mar.13,1896	Closing Price. Mar. 6, 1896.	Am't. of Share	When last XD and Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Alaska Mexican...G	1⅛ 1⅜	1⅝ 1⅞	$5	4 4-5d. Feb.,96	$5	180,000	Alaska......	30, St. Swithin's-ln
,, Treadwell G	5⅛ 5¾	5 5⅛	$25	1/6 Dec 24, '95	$25	200,000		
Anglo Mexican ...S	⅜ ⅝	⅜ ⅝	5 0	2/- Dec.30 95	5 0 0	74,850	,,	23, College Hill;
Arizona (Pref.) Cu	47/6 47/9	46/3 46/6	4 0	1/6 Feb. 13, '96	4 0 0	158,920	Arizona ...	74, Geo.-st., Edinbor
,, 6½ A Deben.	108	108 108½	100 0	½% Oct.30 '95	100 0 0	£135,300	,,	,,
,, 7% B Deben.	96 96½	95	100 0	7% Oct. 30 '95	100 0 0	£181,300	,,	
De Lamar.........GS	15/6 16/6	16/6 17/6	1 0	1/- Feb. 13 '96	1 0 0	400,000	Idaho......	6, Drapers-gardens.
Dickens CusterGS	-/9 1/3	1/3 1/9	1 0	—	0 19 9	420,000	,,	Winchester Ho. E.C.
Doric...................G	7/6 8/-	5/9 6/3	5/	—	0 5 0	125,000	Colorado...	
Elkhorn Priority S	par ¼ pm.	par ¼ pm	1 0	-/3 June 26 '95	0 10 0	175,007	Montana	6, Draper's-gardens.
Gen. M'g. Assoc. ...	6⅜ 7⅛	6⅜ 7⅛	5 10	14/- Apr. 95	5 10 0	27,469	C. Breton	Blomfield House.
Golden Feather G	12/6 13/6	10/6 11/6	1 0	—	1 0 0	180,000	California	St. Stephens Cs E.C.
,, Gate ......G	2/6 3/6	3/ 4/	1 0	—	0 19 6	79,600	,,	,,
,, Leaf...... G	1/- 1/6	1/ 1/6	1 0	—	1 0 0	300,259	Montana	6, Draper's Gardens.
Harquahala..... G	4/6 5/6	6/ 7/	1 0	-/6Nov.14,'94	1 0 0	300,000	Arizona ...	6, Draper's Gardens.
Holcomb Valley G	1/- 1/6	1/3 1/9	5/	—	0 5 0	540,000	California	14, Cornhill, E.C.
Jackson Goldfields	/9 1/3	/9 1/3	5 0	—	0 5 0	408,635	,,	11, Poultry, E.C.
Jay Hawk (New)G	-/6 1/	/6 1/	1 0	-/6 Dec. '92	0 19 3	285,000	Montana	Dashwood House.
La Plata.............S	/9 1/3	/9 1/3	5/	1/3 Oct. '92	0 4 8	405,000	Colorado	11, Poultry, E.C.
La Yesca ....GS	3/6 4/6	4/ 5/	1 0	—	0 19 6	200,000	Mexico ...	20, Bucklersbury, EC
Lyonnaise Mexican	1 1¼	1 1¼	1 0	—	1 0 0	140,000	,,	3, Broad St. Bldgs.
Montana........ GS	8/6 9/6	7/6 8/6	1 0	-/3 April '96	0 19 0	657,158	Montana	Gresham House, E.C.
New Guston ......S	⅛ ⅜	⅛ ⅜	1 0	1/- Oct. '92	1 0 0	110,000	Colorado	25a, Old Broad-st.
Palmarejo ....GS	1/6 2/	2/3 2/9	1 0	—	1 0 0	418,888	Mexico ...	32, Old Jewry, E.C.
PinosAltos(Df)GS	⅜ 5/16	⅜ 5/16	1 0	-/6 Mar. '90	1 0 0	100,000	,,	110, Cannon-street.
Richmond ...GSL	⅝ ⅞	⅝ ⅞	5 0	1/- Dec. 16 '95	5 0 0	54,000	Nevada ...	44, Coleman-street.
St. George.............	1/ 2/	1/ 2/	5/	—	0 4 9	—	G'o'giaUSA	S. Geo Ho., E'cheap
Sierra Buttes ...G	7/16 9/16	⅜ ⅝	2 0	-/6 Oct. 30 '95	2 0 0	122,500	California	138, Leadenhall-st.
,, Plumas Eur. G	11/16 13/16	⅝ ¾	2 0	-/9 Oct. 30 '95	2 0 0	140,265	,,	,,
Springdale.........G	1/- 1/6	1/ 1/6	$1	-/2 Sep. 28, 9	$1	1,000,000	Colorado	20, Abchurch Lane.
Twin Lake Placers	1 1¼	1 1⅛	0	3/- Feb. '95	1 0 0	26,000	,,	6, Lawrence P. Hl. E

SOUTH AND CENTRAL AMERICAN MINES.

Name	Closing Price. Mar.13,1896	Closing Price. Mar. 6, 1896.	Am't. of Share	When last XD and Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Anglo-Chilian PfN	9½ 10	9¼ 9¾ xd	10 0	7/0 Feb. 27 '96	10 0 0	35,000	Antofagst.	123, Bishops,-st. W
,, 6% RylstMB	108 110	108 109	100 0	6% Jan. 2 '96	100 0 0	£200,000	,,	
Argen.Concessions	1/9 2/3	2/ 2/6	2/	—	0 2 0	150,000	S. Luis ...	3 & 5, Queen Street.
Caratal............. G	/6 1/	-/9 1/3	2/6	—	0 2 6	1,330,000	Venezuela	57, Moorgate-st. E.C
Caylloma ....S	—	—	2 0	1/- Apr. 94	2 0 0	125,000	Peru	52, Leadenhall street
Coton ....G	-/3 /9	-/6 1/	5/	—	0 4 0	200,000	Colombia	5, Copthall-bdgs., E.C
Colorado Nit. ...N	1¾ 2¼	1¾ 2¼	5 0	2/6Dec.16,'95	5 0 0	32,000	Chili	12, King-st., Liverp'l
Colombia...........G	—	—	20 0	10 frs. Aug. 94	20 0 0	—	Venezuela	Ciudad Bolivar.
Colombian Hy...G	7/16 9/16	7/16 9/16	1 0	1/- Jy 26, '95	1 0 0	75,000	Colombia	10, Blomfield-street
Copiapo C	2 2¼	2 1/16 2 3/16	2 0	2/6 Dec. 16 '95	2 0 0	100,000	Chili	DashwoodHouse, E.C
Darien "A" ......G	7⅜ 7⅝	4 13/16 4 15/16	1 0	—	1 0 0	49,553	Colombia	Manchester.
,, "B".........	10 10¼	6⅛ 6¾	1 0	x.nwDec 30'95	1 0 0	30,000	,,	
Don Pedro.........G	1/ 2/	1/ 2/	1 0	—	1 0 0	133,102	Brazil	24-5, Devonsh.Cs E.C
El Callao ....G	⅛ ⅜	⅛ ⅜	5 0	9½d. Feb. '94	5 0 0	257,600	Venezuela	8, Bishopsgt.-st. Wn
Frontino & B....G	1 1/16 1 3/16	1 1/16 1 3/16	1 0	6d. Jan. 15 '96	1 0 0	128,862	Colombia	184, Gresham House
Glenrock ....G	1/9 2/3	1/9 2/	1 0	—	1 0 0	199,998	Arg. (&I.)	3-5, Queen-street, E.C
Gravel ....G	2/6 3/6	2/6 3/6	1 0	—	1 0 0	100,000	Colombia	10, Blomfield-street
Guadalupe ......GS	3/6 5/-	3/6 5/	1 0	—	1 0 0	120,000	Honduras	14, Union ct, Old Brd
Julia Taltal ......N	¼ ⅜	¼ ⅜	1 0	—	1 0 0	105,234	Nicaragua	139, Cannon-street.
Lagunas ....N	3¾ 4	3¾ 4	5 0	15p.c. Dec. '94	5 0 0	120,000	Tarapaca	3, Gracechurch st;
Lautaro ....N	6¾ 7¼	6¾ 7¼	5 0	5/- Dec. 30 '95	5 0 0	110,000	Chili	70, ,,
Liverpool ....N	8⅛ 9⅛	8⅛ 9⅛	5 0	15/- Dec 16, 95	5 0 0	22,000	,,	Liverpool.
Loma ....G	-/6 1/-	/6 1/	1 0	—	1 0 0	300,000	Colombia	5, Copthall-building.
London Nit........N	1¾ 2¼	1¾ 2¼	3 0	3/4¾ Nov. '91	5 0 0	10,000	Chili	9, Gracechurch-st.
,, Nit.(Pref.)	3⅜ 4⅛	3½ 4⅛	5 0	3% Nov. 28'95	5 0 0	22,000	,,	,,
Macate	1/9 2/3	1/9 2/3	2/	—	0 2 0	200,000	Peru	11, Old Broad-st, E.C
New Tamarugal N	3/16 5/16	3/16 5/16	1 10	1s. Dec. '94	1 10 0	130,000	Tarapaca	50, Lime-street, E.C
,, 8% Cum Pref	7/16 9/16	7/16 9/16	1 10	3 p.c. Feb. '95	1 10 0	130,000	,,	,,
,, 6 p.c. Debs ...	83 87	80 84	100 0	6 p.c. Feb. '96	100 0 0	£260,000	,,	,,
Orita ....G	1/3 1/9	1/3 1/9	1 0	1/- April '89	1 0 0	30,000	Colombia	10, Blomfield-street
Ouro Preto ......G	—	—	1 0	1/- Feb. '96	1 0 0	80,000	Brazil	6, Queen-street-place
Pac. & Jazpampa N	1⅝ 1⅞	1¾ 2	5 0	4/- May, '95	5 0 0	72,000	Tarapaca	3, Gracechurch-st.
Phœnix	-/3 1/-	/9 1/-	10/-	—	0 8 0	400,000	S. Luis ...	3 & 5, Queen Street.
Primitiva ....N	—	—	5 0	20% Oct. '89	5 0 0	40,000	Chili	Liverpool.
Quebrada C	⅛ ¼	⅛ ¼	3 0	5% Mar. '92	3 0 0	241,956	Venezuela	38, Nicholas Lane.
Rosario ....N	5 5¼	5 5¼	5 0	5/- Feb.13 '96	5 0 0	130,000	Chili	57½, OldBroad-stree
,, (5% Deb.)	104 107	104 107	100 0	5% Oct. 1 '95	100 0 0	£475,000	,,	,,
,, Hu'r Db Scrp	103 105	103 106	100 0	5% Jan. 2 '96	100 0 0	£200,000	,,	,,
St. John del Rey G	⅞ 1	15/16 1 1/16	1 0	x.rtsNov 19 '95	1 0 0	327,650	Brazil	Finsby.Ho., Blmf'd st
San Donato ......N	1 1⅛	1 1⅛	5 0	2/6 May 24 '95	5 0 0	32,000	Chili	12, King-st., Liverp
,, Jorge ....N	5⅜ 6⅛	5⅛ 6	0	5/ Oct. 16 '95	5 0 0	75,000	,,	9, Gracechurch-st.
,, Pablo ....N	2¼ 2¾	2 2¼	0	5/ Oct. 30 '95	5 0 0	32,000	,,	
,, Sebastian ...N	1⅝ 1⅞	1⅝ 1⅞	5 0	5/ May 24 '95	5 0 0	29,000	,,	DashwoodHouseEC
Santa Barbara ...G	—	—	1:/	1/3 Dec. '86	0 10 0	60,000	Brazil	Liverpool
,, Elena ....N	⅛ ¼	⅛ ¼	5 0	5/- Nov. 15 '94	5 0 0	22,000	Tarapaca	3, Gracechurch-st.
,, Rita ....N	3¾ 4¼	3¼ 4¼	5 0	10/ May 24 '95	5 0 0	20,000	Chili	DashwoodHouse, E.C
Segovia ....G	—	—	5/-	—	0 5 0	120,000	Colombia	5, Copthall-buildings
Tolima "A" ....S	7 7½xd	7 7⅛	5 0	5/- Mar. 12 '96	5 0 0	14,000	,,	18, Finsbury-circus.
,, "B" ....S	5⅝ 6⅛xd	5⅛ 6⅛	5 0	5/- Mar 12 '96	5 0 0	6,000	,,	,,

INDIAN AND ASIATIC MINES.

Name	Closing Price. Mar.13,1896	Closing Price. Mar. 6, 1896.	Am't. of Share	When last XD and Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Balaghat MysoreG	3/3 3/9	3/6 4/-	1 0	—	0 19 0	159,945	India	6-7, Queen-street-p
Burma Ruby.......R	¾ ⅞	13/16 15/16	1 0	—	0 18 0	293,681	Burmah...	Suffolk House E.C.
ChampionReef...G	6⅞ 7	6 15/16 7 1/16	1 0	5/- Jan. 16 '96	1 0 0	220,000	India	6-7, Queen-street-pl.
Oorar Central ...G	1/- 1/6	1/ 1/6	1 0	—	1 0 0	100,000	,,	Dashwood Ho., E.C.
Coromandel...... G	1 1/16 1 3/16	1⅛ 1⅜	1 0	—	0 17 0	90,000	,,	6-7, Queen-st.-place
GoldFldsMysoreG	22/ 23/	21/6 22/6	1 0	2/- Feb '96	1 0 0	275,000	,,	6-7, Queen-street pl.
Kadur Mysore......	⅛ ¼	⅛ ¼	6/	—	0 5 0	430,000	,,	Copthall House, E.C
Kempinkote GdFd	/6 1/	/6 1/	6/	—	0 3 6	750,000	India	6-7, Queen-st.-place.
Mysore .... G	5 7/16 5 9/16xd	5 7/16 5 9/16	1 0	4/8 Mar.12 '96	1 0 0	248,254	,,	6-7, Queen-street pl.
My. Harnhalli ...G	1/- 1/6	1/ 1/6	1 0	—	0 16 0	100,007	,,	2, East India Avenue
,, Reefs ...G	8/- 9/	7/6 8/6	1 0	—	1 0 0	160,000	,,	6-7, Queen-street-pl.
,, West(N)G	1 3/16 1 5/16	1⅛ 1⅜	1 0	rts. Jan. 16 '96	0 19 0	127,402	,,	2, Gt. Winchester St.
,, Wynaad G	13/16 15/16	1⅛ 1⅜	1 0	rts. Jan. 16 '96	0 19 0	125,000	,,	,,
Nine Reefs ....G	2/9 3/3	3/3 3/9	10/	—	0 10 0	880,000	,,	6-7, Queen-street-pl.
Nundydroog......G	2 9/16 2 11/16	2⅜ 2⅝	1 0	2/- Mar 12 '96	1 0 0	200,000	,,	,,
Ooregum (D.O.)G	3⅛ 3¼	3⅛ 3¼	1 0	3/- Dec. 16 '95	1 0 0	145,000	,,	,,
,, (10% Pref.).	3 13/16 4 1/16	4⅛ 4	1 0	3/- Dec. 16 '95	1 0 0	107,011	,,	,,
,, (10% Pref.).	3 3⅛	3⅞ 4	1 0	6/- Dec. 16 '95	0 6 6	12,980	,,	,,
Pahang Kabang T	1/16 3/16	1/16 3/16	1 0	—	1 0 0	200,000	Malay Pn.	4a, Jeffrey's st. E.C
Yerrakonda ....G	/3 /9	/6 1/6	4/	—	1 2 6	187,491	Mysore ...	6-7, Queen-street pl

MINE REPORTS—Continued.

ARMADALE GOLD.—Coolgardie, January 28: Report of mine manager: No. 1 shaft. South drive on west wall of lode advanced to 90 feet from crosscut. North drive same level advanced to 72 feet from crosscut, both lodes carrying fine gold by dish prospects. No. 2 shaft sunk to depth of 90 feet from surface. Hanging or eastern wall of lode cut at 75 feet. Shaft continued to 90 feet, where met western or footwall of lode. First 5 feet on hanging wall of lode carries gold equal to 1 ounce per ton. Ordered crosscut east from bottom of shaft to hanging wall of lode, then drive north and south on the hanging wall, which is well-defined and will carry e richest ore.

BLAGROVE'S FREEHOLD.—Captain W. H. Argall, January 13: I beg to hand you report of work done in the mine for the four weeks ending 11th inst.:—The engine shaft has been sunk during the month 20 feet by nine men. Owing to the Christmas holidays this work was delayed. The rock is still very hard, and at present is of a finer grain, but still of a green appearance. In the next few feet we should encounter a change of country. The shaftmen were also employed in doing the necessary timbering and other requisites in connection with the work of sinking. The smith was engaged in completing rails and stanchions for the poppet heads, and the other ordinary work of the mine. The carpenters were employed in repairing the doorways in shaft, putting in sollars, making shaft setts, and other general works as required. The surface hands were excavating ground, assisting carpenters when wanted, and doing other odd jobs about the mine. The machinery and pitwork working we l

COLOMBIAN HYDRAULIC.—Mr. A. E. Oakes, late manager to the company, reports, under date March 6, as follows: In compliance with instructions from your Chairman, I have thoroughly examined the Malpaso property, having in my hand, as requested, my former report written in 1892, and I beg to report as follows: In the first place, Mr. Pechey has underlined the statement I made in May, 1892—namely, "The ridge upon which we are now working extends all the way up to Pavas, a distance of over a mile." The spot where I left off work at that date is still clearly defined, so I have been able to measure the whole ridge from that point to Pavas. I find that the present face of the gravel bank is 300 yards ahead of where I left it, and that from that point up the ridge to Pavas still measures just over a mile. This ridge, in places, shows splendid banks of good quality, and although it will be found of very variable thickness, there will undoubtedly from time to time be a face of considerable height. The same rich gravel exists along this ridge, which I prospected in 1883, in the presence of Mr. Rogers, José Rufino, and Mr. Fitzgerald. The most advantageous way to get at the bottom of this ridge, and work it systematically, is to make a deeper opening on the south side of the mine, having its outlet into the Rio Sucio. This is what Mr. Sharman is doing. I was fortunately present to see the monitor commence on this new opening, and it already has, after only a few days' work, a very promising appearance. It is close to, and very like, the Platilla Mine, which Mr. Rogers saw opened during his stay at Malpaso. It has the same soft decomposed bedrock, with soft and nice-looking gravel on the top, which shows signs of thickening as the bank is opened. All this gravel should pay, and I should judge that it would take at least a year to work through it to the ridge proper. While this work is going on an opportunity is afforded of carrying on a most important operation in the main channel; that is, the deepening and cleaning up of the bed of the stream in which the main sluice has for so many years discharged. This bed, I have frequently stated, will be found very rich, and during my management of the mine I many times expressed my intention to clean this up as soon as the proper time arrived. Mr. Sharman is now availing himself of the opportunity offered by the new opening to carry out this work. He is commencing at a spot near where the line of sluice meets the Aguas Claras. This will give very good results, but I think that on completion of it it will be found very profitable to commence still lower down, and clean up the bed of the Aguas Claras itself. This stream has always been the outlet both of the ancient and modern workers, and I am sure that its bed contains considerable quantities of amalgam, in fact the undercurrent placed some little distance down the stream proves the fact beyond doubt. There are also all along the Malpaso side of the Aguas Claras some good gravel banks, which all be worked with the monitor simultaneously with the cleaning up of the Aguas Claras. Clarke's Banks are worked out, and there now remains nothing but mud and bedrock where these formerly stood, and there is but little gravel remaining from these downwards on the north side of the channel, but on the south there remains the long ridge of gravel banks just referred to, reaching from the Rio Sicio all the way up the Aguas Claras to a point about 100 yards above the manager's house. Then in the centre of the mine on the north of the channel there remains the bank of hard gravel which, though rich, had to be abandoned many years ago on account of its excessive hardness and the insufficient water power at that time to deal with it. Further south is the ridge extending from the Rio Sucio to the mine known as Santa Barbara, or New Platilla. Then higher up the Sucio are extensive banks reaching to the Platilla Mine, near which Mr. Sharman is now making an opening. These banks extend all the way up to the main ridge of the ditch, which itself extends a mile up to Pavas, then there is the Pavas Mine. Besides all this, there is at the north-west extremity of the mine—that is to say, above the head of the main sluice—some excellent gravel of unknown depth. This is too deep for monitor work under existing circumstances, but Mr. Sharman is here carrying on some very interesting drifting or exploration works, which have already discovered a greater depth of gravel than was anticipated, and there is probability that this tunnelling will rediscover the rich streak, or, at any rate, gravel of sufficient richness to pay for drifting. Altogether there is a vast amount of gravel still left in Malpaso, and there can be no possible doubt of the accuracy of the statement made in my report of May, 1892, that there was then "more gravel in Malpaso than had been taken out during the previous 20 years," and notwithstanding the fact that during the last four years, 1892 to 1896, a larger volume of water has been used than at any other period of the mine's history, and also that the gravel washed during the same four years has been of a much softer nature than before, because the moment I left Malpaso a jump was made from the hard on to the soft gravel, I still maintain that it would be a bold statement to say that even now there is not as much gravel remaining in Malpaso as was taken out of it during those 20 years. I do not imply that the mine will be good for another 20 years, because not only are the banks now being washed much softer than formerly, but the supply of water in use is much greater than was ever on the mine previous to the laying of the new pipe line; and, in fact, it is five times as great as it was in the first alf of the twenty years referred to. This volume of water and the softness of the banks should in a great measure compensate for the gravel not being so rich as was the case in the centre of the channel. From this it will be seen that I consider Malpaso is good for years to come, and contains gravel not only in large quantities but of paying quality, and I have no doubt that in the hands of Mr. Sharman and Mr. Bevan the mine will continue to pay dividends for a long time to come. The new pipe which was laid just before I left Malpaso has proved a great success, and the company now has command of more water than was ever the case before. Both ditch and pipe have stood well the test of time.

EAGLES' NEST.—Mining report for January: Fig Tree Creek, 1st level, 26 feet 7 inches were driven, total driven to date 83 feet 7 inches. We are prospecting for a further level, approximately 100 feet above the present 1st level, the reef showing in cutting assays 12 dwts. 22 grains. 2nd level 25 feet 3 inches were driven, total to date 181 feet 6 inches. Average fire assay 4 dwts. 20 grains. 3rd level 26 feet 7 inches were driven, total length 242 feet 3 inches. The assay value shows 5 dwts. 23 grains.—South reef. 1st level 41 feet 10 inches were driven, total to date 56 feet 10 inches. Average assay 11 dwts. 23 grains. 2nd level 38 feet 3 inches were driven, total to date 91 feet 3 inches. The reef here maintains its width, and averages 16 dwts. 18 grains.—West end 3rd Level, 39 feet 3 inches were driven, total 197 feet 6 inches. I am pleased to report the reef in this level is developing very satisfactory. Average assay 18 dwts. 18 grains. Total average fire assay of the whole is 12 dwts. 3 grains. Total footage for the month 200 feet 5 inches. Total length of cuttings 46 feet 6 inches by 7 feet by 4 feet.

GREAT LAXEY.—F. Reddicliffe, March 11: We were unfortunate enough to have a rod and some heavy ironwork in connection with the pumping gear break shortly after my last report, which took more than a week to replace and repair. This had the effect of stopping the driving of the bottom end north from Welsh shaft for about three weeks, consequently only 2½ fathoms have been cut during the past month. The lode in the end is still wide and strong, containing much quartz, but few small spots of ore. The value of the lode in the rise in the 278 is £10 per fathom, and the rise is up 4 fathoms. The 255 end is clear of the hard bands of rock mentioned in last report, and now in slate rock of a fairly ordinary character. If this continues a few fathoms further I propose to crosscut in search of the lode. There is no change at any other point.

HAURAKI.—Captain F. Hodge, January 21: I beg to hand you the following report for the four weeks ending 11th inst.:—The engine shaft sinking by nine men was sunk 6 feet 6 inches, total depth 39 feet 6 inches. Below the 160 feet a flat reef formation was met met with, which drained a part of the bottom of the 160 feet level, probably to the same depth of formation. The rock in the shaft is good for gold. I should mention that our best prospects in finding our No. 2 and No. 3 reefs productive is more northerly from our shaft than in the upper levels, as the best of the reefs appear dipping in that direction. The Iona crosscut was extended 39 feet, total 264 feet. The country here is very broken at present. We are, however, looking forward to settled rock, and better prospects ahead.—160 feet level on No. 1 reef. Two men have driven 11 feet in a reef on vein, averaging about 6 inches. Some of the quartz is very congenial for gold, but up to date none have been met with.—160 north in No. 2 reef. Two men for a part of the month have driven 5 feet. The reef here averages 2 feet, and shows strong blotches of gold.—160 feet north on No. 2 reef. At a point near the forebreast we have cut a winze plat and sunk below the level 5 feet. The reef here is 1 foot wide and producing occasional good picked stone for gold. I look upon this as very important for deeper working as there is a probability of our opening up a new and deeper bunch of gold. This winze is about 160 feet north of our shaft.—160 feet south on No. 2 reef. This level was driven by two men 20 feet. The reef is pinched up small and poor.—160 feet level north. At a point 75 feet from shaft six men have driven a crosscut east 16 feet from No. 2 reef to cut New Year's reef. We cut through a vein and opened on it several feet north and south with poor results. We are now resuming the crosscut in the hopes of finding the New Year's ahead. We passed a small cross leader in this crosscut showing colours of gold, which we shall open on per first opportunity.—Cross reef below 160 feet level. Two men have started a winze now that the shaft has drained the reef. The vein is very small in this reef, being 1½ inches wide, producing occasional very rich specimens.—160 south on No. 3 reef. Two men have been driving here on a reef from the footwall of No. 3, and have driven 19 feet. Average size of reef, 6 inches. We hope on extending in this direction we may discover a payable reef.—Stopes above 160 feet on No. 2 12 men have been engaged stoping above this level, the reef averaging 6 inches wide.—Stopes above 160 feet on No. 3. Six men have been stoping here on a reef averaging about 10 inches wide. We obtained good quality crushing ore from these stopes throughout the month.—160 feet on cross reef. A rise has been put up on this reef 53 feet. The vein, about 3 inches wide, has yielded rich specimen ore, and helped our returns much during the past month.—New Year's reef, 100 feet level. Six men have sunk a winze below this level 27 feet, total depth 37 feet. The reef here averaged 18 inches wide, producing good quality ore, and fair quantities of picked stone.—Stopes above 100 feet level, New Year's reef. 12 men have been stoping above this level, the reef being about 18 inches wide, yielding good quality ore.—160 feet level crosscut east. Two men have driven here 18 feet, cutting through a small reef 2 inches wide; further development is necessary to prove if it is No. 1 reef or not.—100 feet level No. 2 north. Two men have driven this level 15 feet. The reef here is 2 feet wide, and has yielded a few pounds of picked stone during the month, and good crushing ore.—100 feet level crosscut north. This crosscut by four men was extended east of No. 2 reef 113 feet, intersecting a reef formation. We are now engaged driving south on this, and have just passed a footwall dropper showing colours of gold.—Stope on cross reef above 100 feet. Four men have stoped 40 feet in length above this level, the veins averaging 4 inches wide, producing occasional specimen ore. We stamped for the month 278 tons of quartz, and treated 729 lbs. of picked stone, which yielded 1694 ounces of melted gold.

JUMPERS.—Summary of operations for the month of January: 100 head mill. To mining 5291 tons, 15s. 4·35d., £4064 4s. 8d.; to hauling and pumping 5291 tons, 3s. 7·39d., £956 14s. 2d.; to transport 5291 tons, 5·82d., £128 6s. 2d.; to milling 5291 tons, 6s. 7·20d., £1746 1s. 5d.; to charges 5291 tons, 1s. 302d., 27s. 3.78d., £331 4s. 2d.—£7226 10s. 7d. To redemption on 5291 tons 4s., £1058 4s.; cost per ton 31s. 3·78d., £8284 14s. 7d.; to cost of treating 3133 tons tailings, £664 12s. 1d.—£8949 6s. 8d.; profit for month, £1973 12s. 11d.—£10,922 19s. 7d. By 2266·40 ounces gold at 74s., £8385 13s. 7d.; by concentrates, 410 ounces, £1253—£9638 13s. 7d.; by 428·10 ounces gold from tailings, £1284 6s.—£10,922 19s. 7d.—Total receipts and expenditure for month. To cost, mining and milling, £7226 10s. 7d.; to cyaniding, £664 12s. 1d.; to plant account, &c., £726 1s. 4d.; to buildings, &c., £67 10s. 11 d.; to balance, £2238 4s. 8d.—£10,922 19s. 7d. By gold, concentrates, and tailings, £10,922 19s. 7d.—£10,922 19s. 7d. Owing to the recent unsettled state of things, want of coal, and scarcity of labour, the mill ran only 15 days. No development work was done for the month, the rock drill expenses being included in mining, hence the increased cost per ton.

KINSELLA.—Mine report for fortnight ending January 23: North drive driven at 100 feet for the fortnight, making a total of 152 feet from crosscut. We have four men at work in this drive, and carrying 3 feet of stone, which I think payable. Assays 1½ ounce gold per ton.—South drive. 100 feet level driven for the fortnight 44 feet, making a total of 280 feet from crosscut. We have six men working in this drive, the lode being 18 inches big, and expect to go 34 feet before getting to No. 2 south winze. 43 feet level north stope, we have four men at work here, and lode 6 feet big. 43 feet level, No. 2 south winze, sunk for fortnight 6 feet, making a total of 39 feet below 43 feet level. Two men here, lode 3½ feet wide. Assays 1 ounce gold per ton. 43 level south stope have two men here, lode 2 feet wide. Assays 1 ounce gold per ton. 43 feet level south stope have two men here, lode 2 feet wide. Assays 1½ ounce per ton.—Mill return to January 24. 10 stamps running 22½ days; 411 tons ore crushed, yielding 247 ounces 6 dwts. of gold.

KATHLEEN GOLD.—Coromandel, New Zealand, January 22: I beg to hand you the following report of the mine: Since my last we have called tenders and let the sinking of Hartridge's shaft to sink below the surface 150 feet at £3 18s. 6d. per foot. On the 20th inst. we started sinking. The shaft is now down 12 feet. On sinking through soil about 6 feet we have cut into and sunk through 6 feet of sand and pebbles formation. This is already leaving out a large quantity of water. I trust we shall be able to cope with it by manual labour until the contractors here have supplied the Tangye pump and portable windlass. We have met more water, and sooner than I anticipated. If, however, we have to wait a few weeks for our preliminary machinery, we must in the meantime put the contractors to cut clear and drain down the water from the swamps to prepare for winter; this must necessarily be done in any case. The ground is being cleared of scrub bush around our site of workings. The road is completed to land machinery on the mine. The smiths' and carpenters' shop is completed and being used, office and store room also in order and 16 men employed in the shaft and raising clay for puddling, and the mine is already having a busy appearance. Our chief routine is the sinking of the shaft, and which shall be sunk as fast as circumstances will allow. Our main point of interest is now centered in the depth we shall have to sink to find the bed rock. I have the highest opinion of the property.—(Signed) Francis Hodge.

KOMATA REEFS.—Waihikauri, near Auckland, New Zealand, January 18:—I beg to submit the following report for the past month: Komata reef. During the month the level was extended on this reef 23 feet, making total distance driven 248 feet. The reef has been rather small on the hanging wall portion, being about 1 foot in width. The rock is somewhat harder than usual, but there appears to be every indication of getting shortly a more favourable class of country, and from the surface indications the reef should become wider as developed northwards, and yield a better class of ore. The main crosscut east has been advanced 48 feet, making total distance 234 feet. The rock is of a very congenial character, but a little tighter.—Argall's reef is still letting out a large quantity of water. I shall now open out north on the same. Trenching on the surface has been resorted to, to better ascertain the course of the reef, the most southern trench exposing the body of ore to be 20 feet wide. We are now making a paddock to store the ore from this lode, and extending tramway, &c. The carpenters, smiths, and sawyers, and the other surface men were fully employed, also the men on the water race.—(Signed) W. H. Argall.

PREECE'S POINT PROPRIETARY. — Coromandel, New Zealand, January 13: I beg to submit my report for the four weeks ending 11th inst.: The engine shaft was commenced without delay, and is being sunk by nine men. We are now down 14 feet; owing to the Christmas holidays this work was hindered, but now we are in full swing again. The country penetrated so far is of a soft character the rock consisting of a white argillaceous propylite. It contains a good deal of iron and arsenical pyrites, which I consider a good indication for carrying productive reefs. The smith's shop is erected, and smith busy with the necessary work in connection with sinking. The office and store room will be built at once, and the requisite excavations are being pushed forward. The adit level in places will require retimbering. Before the machinery arrives I hope to get the shaft down to sea level a depth of 62 feet, and have everything in readiness for the prompt erection of the pumping and winding engines.—(Signed) W. H. Argall.

PRINCESS ESTATE.—Report on the company's operations for the month of January: Mine. Number of feet sunk and driven, 191 feet.—Mill. Number of days (24 hours) working 30 stamps, 18¾; ore milled, 2791 tons; yield in smelted gold, 1132·73 ounces; average per ton, 8·11 dwts.—Cyanide works. Tons of tailings treated, 2180 tons; yield (in bullion of 60s. value), 391 ounces.—Revenue and expenditure: Expenditure. Mining, hauling and pumping, £2654 4s. 11d.; sorting and tramming, £212 11s. 2d.; reduction, £493 11s. 1d.; general charges at mine and head office, £463 8s. 7d.; mine development redemption on 2791 tons at 6s. 6d., £907 1s. 6d.; working expenses at cyanide works, £495 12s. 8d.—£5226 9s. 11d.; balance, profit for month, £387 12s. 1d.—£5614 2s.—Revenue, Mill gold 1132·73 ounces at 74s., £4191 2s.; cyanide gold 391 ounces at 60s., £1173; water rent and licenses, £250.—£5614 2s.—N.B. The revenue from water rents and licenses varying very much in each month, the average of the annual receipts under this heading has been adopted in this report.—Working costs per ton. Mining, hauling and pumping on 2791 tons, 19s. 0·2d.; sorting and tramming on 2791 tons, 1s. 6·3d.; reduction on 2791 tons, 3s. 6·5d.; general charges on 2791 tons, 3s. 3·8d.—27s. 4·8d.; mine development redemption on 2791 tons, 6s. 6d.; cyanide works (on tonnage treated, 4s. 6·5d.) on 2791 tons, 3s. 6·6d.; total, 37s. 5·4d.—Total expenditure. Working expenses, £5226 9s. 11d.; on capital account—for development, permanent works, £1998 12s. 11d.; machinery and plant, buildings, &c., £1182 11s. 2d.—£8407 14s.; less amount redeemed from mine development on 2791 tons milled at 6s. 6d., £907 1s. 6d.; total, £7500 12s. 6d. The mill and cyanide works were only in operation for 18 days, whilst all wages had to be paid for the full month; this affected the costs of both mining, milling, &c., and of development.

TARARU CREEK.—Captain W. H. Argall, January 23: I beg to submit the following report on the work done in the various sections for the four weeks ending 18th inst.: The Christmas holidays having come in during the month, only three weeks work have been completed.—Norfolk section. The fourth and fifth stopes above the intermediate level on the Californian reef are now being carried forward east of the winze. The fourth stope is along 30 feet, and the fifth 6 feet. The lode varies from 6 feet to 11 feet in width, and is heavily mineralised. The low level on the same reef has been extended 34 feet, making a total distance driven east of the rise 198 feet. At present we are only carrying the footwall portion, but the ore is of low grade. The Missouri main crosscut has been advanced a further distance of 18 feet. A reef about 1 foot in thickness was passed through, but the country being much disturbed has caused it to be rather split up at present.—Dunedin section. The face of the low level on Day Dawn reef has been extended 18 feet, making the total distance driven 190 feet. The reef here is 5 feet in width, but, so far, there is no change. The tributers level on the same reef has been driven 17 feet. The lode is 2 feet wide, and is looking extremely favourable. Four stopes are in progress above this level, and the reef averages 3 feet wide, turning out ore of fair quality. The crosscut to intersect the parallel lode is now in 12 feet. The country which we are penetrating is all that can be desired. A start has been made to open an intermediate level between the tributers and the low level. Good headway has been made in repairing the City of Dunedin low level, 140 feet having been cleared for the month. The crosscut to intersect the Californian reef in this section has been advanced 40 feet. One man is still employed in the opal section. Everything in the battery is working satisfactorily. The amount of amalgam on hand since cleaning up is 213 ounces 5 dwts.

AFRICAN ALLUVIAL. — Reports from the superintendent engineer, Mr. Niness, January 1: We are still suffering from a scarcity of native labour, but a few boys appear to be coming in, and I hope soon to have a full complement. The rains have been much heavier this season than I have known them to be since I have been in the territory. A considerable amount of damage has been done to the roads, in consequence of which the mails are delayed several days beyond their time. To construct the flood race we have had to make a flume, or water box, 224 feet in length, supported by 17 trestles up to 16½ feet in height. We have a large stock of red wood boards on hand, but the wood is hard and difficult to make into water boxes, as they require so much calking. I had to purchase some flooring boards to make the greater portion of the boxes, these boards can be used again, and our redwood boards will come in for other purposes. It is the best wood the country can produce. The length of the flood-race, so far, is 490 feet, 9½ feet deep, and 11 feet wide in the top, and 2½ feet in bottom. I can quite understand the disappointment of the board that we have not yet commenced sluicing pay alluvial. I spend the greater portion of my time at the Zambesi, and I have every faith that we shall yet pay up with good returns for the time it has taken us to make a fair start sluicing. The flood-race will allow us to go on sluicing, no matter what quantity of water is in the river. In this country it is impossible to give a proper estimate of the time it will take to complete a certain portion of work, as there are so many obstacles turn up, which would not be thought of anywhere else—that it is enough almost to dishearten one one. Still the gold is there, and when we start we shall have to work at high pressure.—January 14. The Commandante has sent me some hut tax boys, so that we have now a full complement, and progressing satisfactorily with the work. The weather, too, appears to have taken up, which will be of great help to us.—January 23. We have had some heavy rains again, but just now the weather is fine, and has the appearance of taking up. The country for weeks, with the exception of a few fine days, has been deluged with water. The delay in not yet commencing to sluice pay alluvial is aggravating, and unfortunately cannot be avoided. We cannot be long now in making a start, I am straining every nerve o do so.

AUSTRALIAN BROKEN HILL CONSOLS.—The mining manager reports by mail for the fortnight ended January 30, as follows:—Block 96. 280 level east, No. 1 rise, stopes. Prospects not being encouraging, men have been transferred to No. 1 rise. No. 4 level east off incline. No. 3 rise, driven 7 feet, total 70 feet; no change.—Incline, west stopes, driven 7 feet; opened up a stope to prospect lode to the west. Lode consisting of carbonate of iron showing galena. No. 6 level east driven 4 feet, total 100 feet; no change. No. 5 level east driven 10 feet, total 293 feet 6 inches; no change. No. 1 rise off No. 4 level east, stopes east and west driven 24 feet. Stoping continued westwards, and resumed driving eastwards and obtained some ore from both stopes containing galena and fahlers. No. 2 west off incline driven 12 feet. In stoping at a distance of 90 feet from incline, we have come on to a small seam of galena, accompanied with grey ore and a little canary ore; it looks very promising at present, and may lead to something better.—Note. The quantity of rock mined during this fortnight was 2288 cubic feet.

BALAGHAT MYSORE.—Thomas Richards' report for the fortnight ending February 15:—Ogle's shaft. The crosscut east at the 270 feet level south, near south shaft, has been extended 12 feet, total distance 67 feet. No further portion of the lode having been met with in this direction, the branch intersected at 53 feet in the crosscut has been opened upon, and drivages have been extended upon it 4 feet northward and 10 feet southward. In the former the quartz is now 4 inches wide, worth 1 ounce 10 dwts. of gold per ton, and in the latter it is 2 inches wide, carrying a trace of gold.—Haines' shaft. The 410 feet level north crosscut east has been extended 1 foot 9 inches, total distance 61 feet 9 inches. No change.—Cyanide works. The treatment of the tailings is being regularly proceeded with.

BANNER.—Writing on February 15 the general manager, Mr. G. H. Evans, says—that the shaft has advanced a depth of 15 feet for the week. On February 21 the shaft had reached a depth of 934 feet, and sinking at the rate of 15 feet per week would make the present depth about 940 feet, leaving only about 60 feet to sink before reaching the 1000 feet level, when crosscuts will be driven to open up the proved rich lode, and also the mother lode, after which milling will be commenced.

BAYLEY'S REWARD CLAIM.—Mine manager's report, dated Coolgardie, January 20: The following is the report of work done for the fortnight ending 18th inst.:—Main shaft sunk for fortnight 14 feet, total depth 452 feet. The ground still continues hard, and at times small stringers of quartz have been met with. There is no increase in water.—380 feet level. The east crosscut has been extended 3 feet, total distance 45 feet. Face in diorite; no sign of stone. The west crosscut at this level is now in 36 feet, having been driven a distance of 10 feet. The end is very dry, and there is no appearance of stone showing, the face of crosscut being also in diorite.—Tom V. Browne.

BAYLEY'S REWARD NO. 1 SOUTH.—Mine manager's report, dated Coolgardie, January 20: I beg to report as follows on work done in the mine for the fortnight ending 18th inst.: 170 feet level. The rise from the back of this level has been put up an additional 7 feet, its total height now being 24 feet. The lode here is 3½ feet wide, and gold has been seen continually in rising. We have now about 10 feet further to rise to connect with the winze being sunk from level above.—120 feet level. The winze from the bottom of this level has been sunk 4 feet, total depth 10½ feet. Have timbered top of winze, and also fixed windlass. Work will now go ahead with greater speed. So far have not seen any gold in the stone broken. The lode in the stopes at the back of this level is showing about 2 feet wide, but quantity for stoping is small.—90 feet level. At this level I am putting in a prospecting drive eastward at a point 25 feet south of the shaft. The drive is now in a distance of 8 feet, the face at present showing good soft country.—Stone treated. During the fortnight 100 tons of stone have been crushed. Of this quantity 14 tons were taken from the dumps, 17 tons from the rise, and 69 tons from the stopes and winze. Total quantity of stone treated for the month, 150 tons; yield 121 ounces.—Tom V. Browne.

BREMNAES.—The following report has been received from the manager, Mr. Daw, dated Haugesund, March 6: Risvig Mine. Since writing last there is little or no change to report. There is a little more quartz in the levels going south, and we are glad to say the men are making good progress.—Gapleskog. In the bottom level we have about 9 inches of quartz, and are expecting daily to strike the sink sunk by the old company. In the rise the walls are opening again, and about 4 inches of quartz is exposed. No alteration elsewhere.—Fladences. We have great pleasure in reporting that the men are working well, and, furthermore, that the width and value of the lode is well maintained. We have engaged six men to drive the level south from bottom of shaft, so as to effect connection with the sink as early as possible.—Surface. We have resumed milling again, and hope in a few days hence to give the quartz from Fladences a test.

CLUTHA.—Developments at the Clutha Mine are proceeding in accordance with the consulting engineer's advices, and the manager, writing under date February 5, reports:—We have had to blast away a part to form the C winze, and in blasting here we have seen a quantity of visible gold very rich.

CARRINGTON.—Report on the Carrington Mine, Charters Towers, Queensland: On the 12th inst. I made a survey of the workings of the Carrington Mine at and above the No. 1 level of the main shaft. The No. 1 south-east level has been driven 350 feet from shaft, and I found a formation of a fair width the whole length with, most of the distance, a small reef of rather poor quality. The level west has been driven a short distance since my previous survey. As the shaft below this was full of water, I am unable to state, from an inspection, the size or appearance of the reef further down. At 120 feet from surface a north and south reef has been driven on—to the north 50 feet, and south 40 feet. There is a reef here a few inches in thickness—the few tons crushed yielding from 12 dwts. to over an ounce of gold per ton of stone. This stone at present will not pay, but it appears to be worth a better trial than it has had. If the north level be driven a further distance of 50 feet, it is probable the reef met at 75 feet from surface in the shaft will be met. I have read the mining managers' reports for some years past, and I append a table showing the depths at which the various reef formations have been met, both in the main shaft and the old tributers' shafts. From the reports it appears that the Victoria formation, forked from the main shaft, is the most important of any met. The reports do not go back to work done in the Caledonia P. C. shaft. From estimates I have made, the lowest reef, known as Victoria, should be met in the main Carrington shaft at not deeper than 550 feet from surface. This would be its depth if the steep dip it has in the Victoria East Extended shaft (see plan) for the last 200 feet continue to the Carrington main shaft. I would here point out that there are three reefs known by the name of Victoria. Their outcrops are so near to each other that managers, when meeting them in shafts, have had a difficulty in determining which was the true Victoria, or which (say) the St. Andrew.—As to the future working of the mine: The rich stone worked in the Victoria Mine has always had a northerly trend, commencing from about 180 feet east of the old underlie shaft, or about 80 feet west of the Carrington boundary. This is the nearest point of the workings south-west of the northern corner of the Carrington Mine. Under the northern corner a shoot of stone of fair quality is being worked. Apparently this stone will be found near the bottom of the Carrington main underlie shaft. The stone worked from this shaft is the Victoria reef, without the rich patches found in the Victoria Mine, similar, in fact, to the reef left unworked by the Victorian management towards the Carrington boundary. Now, I think it is quite likely that the ground prospected by the Carrington Company, together with the unworked ground referred to in the Victoria Mine, is part of a large block of poor ground within the channel containing the rich stone. As the rich stone in the Victoria has a northerly and southerly trend, the direction to prospect in the Carrington is southerly from the Victoria workings, of course keeping on the right formation. The direction of the No. 1 level south appears to show that it left the main formation, which is easterly, for a southern branch. In this level, from 120 feet to 150 feet from shaft, I advise the sinking of a winze. Assuming that this portion of the level is on the main Victoria reef, the winze would to some extent prospect it under the old workings on the Caledonia reef, where it, the Caledonia, was rich. I also advise the driving of a level east from near the bottom of the underlie shaft, as I expect the stone being worked in the Victoria Mine under the northern corner of the Carrington lease will be found in this direction, not far from shaft, which may lead to rich stone if my theory be correct. I think the driving of a level here is the most important work. As there is a large quantity of water in the underlie shaft, which it is not convenient to bail whilst the downright shaft is being sunk on contract, this will have to stand in abeyance for the present. In the meantime the winze may be sunk in the No. 1 south level, and the 120 feet reef prospected.—William White, F.G.S., M.I.S.V., certificated mine surveyor, &c.

CRESCENT.—Fortnightly report of Mr. T. G. Davey, superintendent, dated January 30: Crescent Mine. South tunnel towards main shoot advanced 10 feet 6 inches, total 365 feet. Shall continue this tunnel until hanging wall of lode has been reached. Drive north on same tunnel on slightly auriferous quartz vein extended 24 feet. Work has been suspended here.—Victory Mine. Drive north of deep tunnel on Neill's shoot advanced 15 feet, total 75 feet. The lode became poor at 75 feet, and is now barren, but we hope to strike a second shoot in this direction by extending the drive. The main shoot has been proved to be highly auriferous at this level for a length of 126 feet. Crosscut west of drive south of same tunnel towards footwall of lode, wall reached at 9 feet, carrying colours of gold in small seam. Extension of deep tunnel towards western lode advanced 18 feet, total 155 feet. In this extension the main footwall of lode—not hitherto seen—was reached at a distance of 9 feet, after passing through a vein of auriferous quartz, 1 foot in width, and valued at 2 ounces of gold per ton. In the drive south of old tunnel, on western lode, we have to-day struck a vein of quartz, 1 foot in width, which is valued at 1 ounce of gold per ton.—Orlando Mine. Deep tunnel extended 4 feet, total 179 feet. Ground continues to be more favourable for expeditious driving.—Returns. We cleaned up on the 29th inst., after crushing 26½ tons of ore from the Victory Mine, and obtained a return of 82 ounces 3 dwts. of melted gold, equal to 3 ounces 2 dwts. 12 grains of gold per ton. This is the third of a series of trial crushings from the Victory Mine, and as such crushings entail a serious expenditure in bagging and packing, I have concluded that it will be unwise to make any further trials until the company's new mill has been completed.—Erection of mill. The race and tramways will be completed in a few days, and the first five stamp battery ordered is now in position. We are now awaiting the arrival of the second five stamp battery, and hope to be able to commence crushing early in March.

CHAMPION REEF (Nannine).—The directors have published the following statement:—Machinery. The first portions of the Fraser and Chalmers' battery, consisting of the boilers, framework, mortars, &c., were dispatched in the ss. *Sarpedon* on February 20, and should be landed at Geraldton about April. No time will be lost in sending it up to the mine. The remainder follows in the *Breconshire*, sailing about the 20th inst.—The Mine. The manager reports that he is getting out the foundation for the mill, and pushing the development of the mine, so that everything may be ready to start crushing as soon as the mill is erected. Under date January 26 last he reported as follows:—I beg to advise the opening up of a new reef about 20 yards west of the Contra lode, which is nearly vertical. The width of this reef is about 18 inches of dense laminated quartz, exhibiting a most healthy appearance, showing gold freely, besides being heavily charged with iron pyrites. Both the Contra reef and this last new find being vertical, indicates that at no great depth—say, 250 feet—there must be contact with the main (Champion) lode, at which point, as is usual, there should be found a much-enlarged body of stone, while the probability of improved quality is fairly certain. I purpose prospecting the latest discovered reef to water level, by which time I trust that the winding and pumping plant will at least be *en route* to here to enable us to push down the main engine shaft to (say) 200 feet, and so with the aid of the steam pump will ensure an ample water supply for all purposes. On November 22 last, the directors wrote Captain Osborne as follows:—The board are desirous of being able to judge of the quality of the stone from actual assays, and I am directed to request you to send home at the earliest opportunity possible, some fairly representative samples of the different reefs throughout the property; not picked samples, but samples showing the fair average run of the stone available in quantity to supply the battery. To this Captain Osborne replied on January 15, as follows:—Agreeably with your wish, I am sending by to-morrow's coach, samples of stone from the Contra lode (lease 37) and a sample of quartz from the main Champion Reef. The latter sample is a portion of several lots taken from leases 10, 11, 13, and 17, from the various shafts, open cuts, and outcrops along the Champion Reef, and fairly represents the bulk of lode stone. The Melbourne secretary, writing to the London board under date February 4, says:—Mr. Osborne forwarded a small bag of the pounded quartz, taken from the various reefs, such parcel being a part of a quantity pounded, the remainder of which Mr. Osborne sent to you. I now enclose you assay report of the result of treating one-half of the contents of small bag. The result of this assay was 4 ounces 18 dwts. of gold per ton.

GREAT BUNINYONG.—Extract from manager's report, dated Melbourne, February 4: The erection of both plants is rapidly progressing, and the contractors discharging their duties faithfully and well; satisfactory progress in the present stage of our career is not altogether unallayed. To be subject to heavy top expenditure without advancement in the shaft is vexatious, but it has to be submitted to. The absence of earlier opportunity for obtaining efficient plant was a drawback, but the complete equipment we now possess, and the cost at which it was obtained, is, to some extent, compensating for the time lost, and we congratulate ourselves in having, though at some cost of time, been enabled to avoid entering upon the price of new machinery.

HARRIETVILLE.—Fortnightly report of Mr. T. G. Davey superintendent, dated January 30: Tiddledee Mine, Bibby's new lode. Drive north of shaft extended 18 feet. Lode 1 foot wide, and valued at 13 dwts. of gold per ton. Lode at bottom of shaft 18 inches wide, and valued at 12 dwts. of gold per ton. Crosscut east of tunnel E advanced 20 feet, total 103 feet. We are daily expecting to reach Bibby's lode at this level. Drive north of tunnel F towards Bibby's shoot extended 62 feet, total 62 feet. Lode 1 foot wide, and uniformly auriferous, although of low grade. We should reach the south end of main shoot in about a fortnight.

HETTY.—Extract from manager's letter, dated February 14: My report for the week is as follows:—Shaft 1 east drive. The winze at end of drive is now down 16 feet on the incline. We are still in blue bars and shales, and must go down some feet further to reach the reef.—Shaft 2. The east drive is in 45 feet, and the west 36 feet 6 inches. A portion of the reef has been stripped down; there is a good body of it, average 18 inches and pans well. Shaft 4 east drive now in 11 feet. The reef has apparently pinched out at this spot. Shaft 7 has now been sunk 61 feet. Still in shale. This shaft is just to the east of the east quartzite (old formation) towards which a drive will be made, when sunk as far as we can get with hand labour. Shaft 8 is now down 30 feet in the above-mentioned quartzites. Men's quarters and smith's and carpenter's shop should be completed during the coming week. Day shifts only have been worked so far, and I am afraid it will be some time before boys become sufficiently plentiful to allow of night shift being put in. At present I have 43 Kaffirs and 3 white men on the mine.

LISBON-BERLYN.—The manager's advices give the following details of work done during January:—Mining. Theta north driven 72 feet, thickness of reef 14 inches, output 494 tons, assay value 7·40 dwts. per ton. Theta south driven 587 feet, thickness of reef 14 inches, output 1094 tons, assay value 8·52 dwts. per ton. Theta mill section driven 169 feet, thickness of reef 6 inches, output 145 tons, assay value 9 dwts. per ton. Theta No. 2 section driven 209 feet, thickness of reef 18 inches, output 94 tons, assay value 7 dwts. per ton.—Theta north, stripping on outcrop. Output 20 tons, assay value 3·75 dwts. per ton.—Theta south. Prospecting. Driven 60 feet, thickness of reef 13 inches, assay value 3·75 dwts. per ton.—Milling. The mill ran (10 stamps) 30 days, and crushed 956 ons of ore, of an average assay of 8·18 dwts. per ton, yielding 73·17 ounces of smelted bullion.—Cyaniding. 400 tons screened ore and 1073 tons of tailings were put into the vats during the month, and the bullion recovered amounted to 735·19 ounces. Total bullion recovered 808·36 ounces, of an approximate value of £1963.—Native labour. Under date January 31 the manager writes as follows:—We have now as many Kaffirs as we can put up, and all the levels are being carried on by double shift.

MYSORE.—R. Hancock, February 19: Report on mining operations for the fortnight ending February 17: Rowse's shaft, 1460 feet level north of crosscut west. There are two stopes in the back of this level, the average width of the lode being 4 feet, giving an average assay of 5 dwts. 20 grains.—1360 feet level south of crosscut. There are four stopes in the back of this level, the average width of the lode being 1 foot 9 inches, giving an average assay of 1 ounce 6 grains.—1360 feet level north of crosscut. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 13 dwts. 1 grain.—1360 feet level north of sump winze north-east. This level has been driven 17 feet 6 inches, making a total distance driven of 370 feet 6 inches. The rise in back of this level has been put up 12 feet, making a total height of 62 feet. The lode is 3 feet wide, assaying 13 dwts. 1 grain.—1360 feet level south of sump winze. This level has been driven 14 feet 6 inches, making a total distance driven of 169 feet. The lode is 5 feet wide, assaying 10 dwts. There are two stopes in the back of this level, the average width of the lode being 5 feet, giving an average assay of 14 dwts.—1260 feet level north. There are five stopes in the back of this level, the average width of the lode being 3 feet 2 inches, giving an average assay of 19 dwts. 1 grain.—1260 feet level north of crosscut. This end has been driven 17 feet 6 inches, making a total distance driven of 73 feet. The lode is 5 feet wide, assaying 1 ounce 15 dwts. The rise in the back at the end of the crosscut has been put up 17 feet, making a total height of 70 feet. The lode is 4 feet wide, assaying 3 ounces.—1260 feet level south of crosscut. This end has been driven 25 feet, making a total distance driven of 93 feet. The lode is 5 feet wide, assaying 1 ounce 12 dwts. 16 grains.—1260 feet level south. This level has been driven 1 foot 6 inches, making a total distance driven of 270 feet. The lode is 6 inches wide, assaying 13 dwts. 1 grain. There are three stopes in the back of this level, the average width of the lode being 2 feet 10 inches, giving an average assay of 1 ounce 3 dwts. 2 grains.—1160 feet level north. The lode in the stope in the back of this level is 2 feet wide, assaying 13 dwts. 1 grain.—1160 feet level north of crosscut. This end has been driven 21 feet 6 inches, making a total distance driven of 98 feet. The lode is 5 feet wide, assaying 2 ounces.—1160 feet south of crosscut. This end has been driven 10 feet, making a total total distance driven of 70 feet. The lode is 2 feet wide, assaying 1 ounce 15 dwts.—1160 feet level south. The rise in the back of this level has been put up 16 feet, making a total height of 169 feet. The lode is 1 foot 6 inches wide, assaying 1 ounce 10 dwts. There are five stopes in this level, the average width of the lode being 1 foot 6 inches, giving an average assay of 1 ounce 2 dwts. 10 grains.—North of the crosscut east. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 1 ounce 8 dwts.—1060 feet level north of No. 2 crosscut. This level has been driven 9 feet, making a total distance driven of 312 feet. The driving of this has been temporarily suspended, and the machine put to strip the bottom of the 1060 crosscut to Crocker's shaft for the purpose of laying a tramway. The rise in the back of this level has been put up 17 feet 6 inches, making a total height of 93 feet 6 inches, and holed to the 890 feet level north of crosscut. We have started another rise in the back of this level 130 feet north of the above rise. This rise has been put up 2 feet. The lode is 5 feet wide, assaying 3 ounces.—890 feet level north. The lode in the stopes in the back of this level is 2 feet wide, assaying 1 ounce 19 dwts. 4 grains.—780 feet level north. The lode in the stope in the back of this level is 2 feet wide, assaying 1 ounce.—620 feet level south. There are two stopes in the back of this level, the average width of the lode being 2 feet, giving an average assay of 13 dwts. 1 grain.—Taylor's shaft 466 feet level north. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 9 dwts. 18 grains.—Crocker's shaft, crosscut west to the 1060. This has been driven 6 feet, making a total distance driven of 78 feet 6 inches, and holed to the 1060 feet level. The machine has now been put to drive north of the shaft for a plat. Driven 16 feet.—890 feet level north. This level has been driven 28 feet, making a total distance driven of 226 feet 6 inches. There is nothing here to report.—890 feet level south. There are 6 stopes in the back of this level, the average width of the lode being 3 feet 10 inches, giving an average assay of 1 ounce 2 dwts. 18 grains.—780 feet level north. The lode in the stope in the back of this level is 4 feet wide, assaying 19½ dwts. 14 grains.—780 feet level south. There are eight stopes in the back of this level, the average width of the lode being 3 feet 3 inches, giving an average assay of 17 dwts. 5 grains.—620 feet level south. The lode in the stope in back of this level is 1 foot 6 inches wide, assaying 6 dwts. 12 grains.—236 feet level north. The lode in the stope in the back of this level is 2 feet wide, assaying 15 dwts.—Gilbert's shaft. This shaft has been sunk 8 feet, making a total depth of 135 feet below the 650.—650 feet level north. This level has been driven 19 feet, making a total distance driven of 458 feet 6 inches. The lode is 7 inches wide, mixed. No sample taken.—520 feet level north. There are three stopes in the back of this level, the average width of the lode being 1 foot 11 inches, giving an average assay of 9 dwts. 20 grains.—520 feet level south. The winze in the bottom of this level has been sunk 4 feet, making a total depth of 41 feet. The lode is 1 foot 8 inches wide, assaying 19 dwts. 14 grains. The lode in the stope in the back of this level is 1 foot 8 inches wide, assaying 18 dwts. 6 grains.—360 feet level north. The lode in the stope in the bottom of this level is 2 feet wide, assaying 6 dwts. 12 grains.—290 feet level north. There are two stopes in the back of this level, the average width of the lode being 2 feet 1 inch, giving an average assay of 11 dwts. 12 grains.—180 feet level south. There are two stopes in the back of this level, the average width of the lode being 2 feet 6 inches, giving an average assay of 10 dwts. 18 grains.—Tennant's shaft, 730 feet level north of crosscut west. This end has been driven 15 feet, making a total distance driven of 317 feet. The lode is 2 feet wide, assaying 6 dwts. 12 grains.—360 feet level north, south of crosscut. There are two stopes in this level, the average width of the lode being 2 feet, giving an average assay of 9 dwts. 6 grains.—290 feet level south. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 1 ounce.—Schaw's shaft, 450 feet level north of crosscut. There are two stopes in the back of this level, the average width of the lode being 1 foot 2 inches, giving an average assay of 1 ounce 1 dwt. 12 grains—450 feet level south of crosscut. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 6 dwts. 12 grains.—320 feet level north. There are two stopes in the back of this level, the average width of the lode being 2 feet 4 inches, giving an average assay of 10 dwts.—McTaggart's shaft. This shaft has been sunk 2 feet, making a total depth of 36 feet below the 650.—650 feet level north of crosscut west. This level has been driven 3 feet, making a total distance driven of 6 feet 3 inches. The lode is 1 foot 3 inches wide, assaying 1 ounce.—650 feet level south of crosscut west. This level has been driven 16 feet, making a total distance driven of 38 feet. The lode is 1 foot 6 inches wide, assaying 1 ounce.—550 feet level north. This level has been driven 16 feet, making a total distance driven of 382 feet 8 inches, there is nothing here to report. The winze in the bottom of this level has been sunk 3 feet, making a total depth of 18 feet 9 inches, the lode is 9 inches wide, assaying 1 ounce.—550 feet level south of crosscut west. This level has been driven 12 feet 6 inches, making a total distance driven of 342 feet 3 inches, the lode is 1 foot wide, assaying 13 dwts. 1 grain. The winze in the bottom of this level has been sunk 2 feet 6 inches, making a total depth of 56 feet, the lode is 1 foot wide, assaying 8 dwts. 12 grains. We have resumed the sinking of the No. 1 winze from the bottom of the 450 feet level south of crosscut which had reached a depth of 24 feet below this level, sunk 3 feet 6 inches, making a total depth of 27 feet 6 inches, the lode is 9 inches wide, assaying 9 dwts. 14 grains.—320 feet level south. There are two stopes in the back

of this level, the average width of the lode being 2 feet, giving an average assay of 10 dwts. 18 grains.—Prospect shaft. This shaft has been sunk 1 foot, making a total depth of 123 feet 3 inches, the sinking has been suspended, and the men put to drive a level south on some lodey matter we passed through at a depth of 117 feet. Driven 10 feet.—Ribblesdale shaft. This shaft has been sunk 3 feet, making a total depth of 43 feet below the 1520, the lode is 1 foot wide, mixed assaying 3 dwts. 22 grains.—1520 feet level north. This level has been driven 18 feet 6 inches, making a total distance driven of 90 feet 6 inches, the lode is 5 feet wide, assaying 5 dwts. 5 grains.—1460 rise. We are engaged stripping down this to the size of the shaft.—Crosscut west from the 1060. This has been driven 14 feet, making a total distance driven of 108 feet. Williams' shaft crosscut east from the 173. This end has been driven 2 feet, making a total distance driven of 183 feet 6 inches.—Health. Good.

MYSORE WEST AND MYSORE WYNAAD CONSOLIDATED.—Half monthly report for February 15; Tank Mine. South shaft. The 507 crosscut west has been driven to a distance of 115 feet 3 inches, making a progress of 12 feet. At a distance of 108 feet from the shaft we cut the lode, but it is here of small size and value. As we expect pinched ground to the south of the shaft we are only starting to drive north on the quartz at present. 507 level north has been driven in a distance of 17 feet 6 inches from the crosscut, progress 17 feet 6 inches. The lode is about 6 inches wide, and carries a little quartz worth 2½ dwts. per ton. This end is bending round towards the east a little, and is likely to improve if it holds off in that direction.—450 north. In order to cope with the amount of black rock that is being hauled at present from the plat and level at the 507, we have been obliged to temporarily suspend operations in this end. We have started a winze in the bottom of this level 60 feet from the crosscut and this has been put down by hand labour to a depth of 7 feet. The quartz in bottom is 6 feet wide, and worth 6 dwts. per ton. The stope north of No. 2 rise is 3 feet wide, and worth 7 dwts. per ton.—450 south. The winze here has been sunk 63 feet 9 inches, progress 18 feet. There is 6 inches of quartz in the bottom, worth 8 dwts. per ton. The stope in back north of rise contains 6 feet of quartz, worth 9 dwts. of gold per ton. The stope south of rise is 3 feet wide, and worth 13 dwts. per ton. Intermediate south stope is 8 feet wide, and worth 1 ounce 1 dwt. per ton. The new shaft to cut the lode at 450 feet has been called Walker's shaft, and will in future be referred to under this name. The shaft is now down 43 feet, progress 10 feet.—The mill. 20 heads were started on the 4th inst.; of these the new 10 heads are running well, but the old 10 head mill has been giving trouble with the cam keys, but is now running better.

MOUNT ROWE CONSOLIDATED.—The manager, under date of January 29, reports as follows: The oil engine and poppet head are now erected and completed at the Regina north shaft. About 100 feet of timbering has been done in the shaft, and men are now in the bottom sinking below the crosscut at 152 feet, and making room for an inset frame. When this is done the timbering of the shaft will be completed throughout. I am pleased to say that at the bottom of the shaft we have struck another reef, the thickness of which has not yet been ascertained, but from dollying and washing I have got as good prospects as from any stone yet found on the property. It is intended to carry this shaft down to water, and then crosscut for the reefs. Enclosed please find tracings showing plant and elevation of poppet head and engine. The photographs have not yet been completed, but will be sent by next mail.

MYSORE REEFS (Kangundy).—Fortnightly report of Captain M. Scantlebury, mine agent, dated February 19: Underlie shaft. This shaft has been sunk 7 feet 3 inches, now 82 feet 6 inches below the 425 feet level. The quartz is 18 inches wide, assaying 5 dwts. 5 grains of gold to the ton. Intermediate level 60 feet below the 425 has been extended 9 feet, now 17 feet 6 inches from shaft. The quartz is 2 feet wide, assaying 9 dwts. of gold to the ton. 425 feet level north has been advanced 11 feet 9 inches, now 153 feet 9 inches from shaft. The lode is 1 foot 9 inches wide, composed of quartz, arsenical pyrites, and schist, assaying 3 dwts. of gold to the ton. Winze below the 425 feet level has been sunk 7 feet 3 inches, now 33 feet 3 inches below the level. The quartz is 2 feet wide, assaying 1 ounce 5 dwts. of gold to the ton.—Stope north of winze. The quartz is 1 foot 6 inches wide, assaying 12 dwts. of gold to the ton. 425 feet level south has been advanced 7 feet 6 inches, now 126 feet 6 inches from shaft. The lode is pinched, and the rock very hard.—Stope in bottom 325 feet level. The quartz is 15 inches wide, assaying 8 dwts. of gold to the ton.—Stope in bottom 325 feet level north of vertical shaft. The quartz is 18 inches wide, assaying 8 dwts. of gold to the ton.—Stope in back of 250 feet level north. The quartz is 9 inches wide, assaying 1 ounce 2 dwts. of gold to the ton. Vertical shaft has been sunk 5 feet, now 317 feet 3 inches from surface. The quartz is 1 foot wide, assaying 14 dwts. of gold to the ton. 260 feet level north has been advanced 16 feet, now 278 feet 6 inches from shaft. The lode is 2 feet wide, composed of quartz, arsenical pyrites, and schist, assaying 3 dwts. 6 grains of gold to the ton.—Stope in bottom of 260 feet level. The quartz is 2 feet wide, assaying 8 dwts. of gold to the ton.—New north shaft. During the past two weeks we have been timbering; sinking will now be resumed.—Trial shaft in ancient workings on western reef. We unbottomed the ancient workings at a depth of 25 feet, and have sunk 5 feet below this. We have met with small branches and stringers of quartz showing a little free gold in the pan, but nothing of value.

MOUNT LYELL.—Mine manager's report for week ending January 23: No. 3 tunnel south drive. The face has been driven 5 feet, making the total length 536 feet. No change to note.—No. 4 tunnel south drive. Drive advanced 6 feet, total 423 feet, still in good copper ore.—No. 5 tunnel, No. 2 crosscut. This face has been driven 2 feet, total 21 feet, pyrites very hard for breaking.—Progress report for week ending January 24: Hauling line. Terminal cutting nearing completion, retarded by slipping ground.—Smelter building. Annexes roofed over, housing of extension bins erected, laying railway girders over bins, various inside work and siding north end of building.—Crusher building. Erecting bins.—Main chimney. Height above grade 136 feet, chapter in progress. Babcock and Wilcox boilers fully tested to above working pressure, assembling finished ready for brick casing. Hot blast stoves, fireboxes, firebridges, and heating chambers in progress.—Root's blowers. Both erected.—Blast furnaces. Brickwork of shafts in progress, erecting service tank, laying fluming from reservoir to upper tank of penstock.—Converter department. Remelter pier and upper flue retaining wall in progress, excavating for outside flue. Weather mostly fine.—Superintending engineer's report, January 25: Good progress is being made with the earthworks in spite of the continued wet weather. Expect the whole of the earthworks to the 15 mile to be completed in about a fortnight. From Lynchford to Queenstown good progress is being made by the contractors.

NINE REEFS.—Mine report for fortnight ending February 17:—Vyvyan's shaft. No. 1 stope in the bottom of the 145 feet level north produces quartz from 4 to 5 inches wide, assaying 8 dwts. 14 grains of gold per ton. No. 2 stope in the bottom of the 145 feet level north produces quartz from 5 to 6 inches wide, assaying 5 dwts. 19 grains per ton. No. 1 stope in the bottom of the 145 feet level level south produces quartz from 6 to 7 inches wide, assaying 10 dwts. 8 grains per ton. No. 1 stope in the back of the 145 feet level south produces quartz from 5 to 6 inches wide, assaying 6 dwts. 10 grains per ton. No. 2 stope in the back of the 145 feet level south produces quartz from 4 to 5 inches wide, assaying 12 dwts. 4 grains per ton.—South shaft. The 300 feet level north has been extended 24 feet, total distance, 122 feet 6 inches, quartz disordered, assay nil. The 300 feet level south has been extended 29 feet, total distance 126 feet, quartz 2 to 3 inches wide, assay nil.—Oriental lode, main shaft. We have fixed donkey pump at the 310 feet level and replaced some of the old timber work around this level with new, and are now repairing skip road.—Baynard's shaft. We have now cleared this shaft 130 feet from surface.—Surface work. We have erected new pump rods from engine to shaft. This part of the machinery is now in good order.—Health. Good.

NUNDYDROOG.—Thomas Richards' report for the fortnight ending February 15.—Kennedy's shaft. The 700 feet level north has been driven 17 feet 6 inches, total distance distance 35 feet. Lode 2 feet wide, assays 7 dwts, 12 grains of gold per ton. The 700 south has been driven 12 feet 6 inches, total distance 30 feet. Lode 4 feet 6 inches wide, of quartz, assaying 10 dwts. The 600 north has been driven 18 feet 6 inches, total distance 389 feet 6 inches. Lode 1 foot wide, assays 5 dwts. The 600 south has been driven 16 feet 6 inches, total distance 335 feet 6 inches. The lode, 4 feet wide (mixed), assays 2 dwts. 12 grains. The crosscut west from this level has been extended 11 feet 3 inches, total distance 64 feet 3 inches. No change. In two stopes in the back of the 520 north the lode averages 3 feet 3 inches in width, and 1 ounce 9 dwts. 9 grains in assay value. The 440 south has been driven 21 feet, total distance 1305 feet. The 440 south crosscut west has been extended 14 feet 6 inches, total distance 96 feet 6 inches. No change. The 370 north crosscut has been extended 14 feet, total distance 466 feet. No change. In two stopes in the back of the 370 north the lode averages 3 feet 3 inches in width, and 1 ounce 4 dwts. 9 grains in assay value. In the stope in the back of the 370 south the lode is 7 feet wide, and assays 2 ounces 7 dwts. 12 grains. The 300 north has been driven 13 feet, total distance 348 feet. Lode 1 foot wide, assaying 2 ounces of gold per ton. The 300 north rise has been put up 10 feet, total height 105 feet. Lode 3 feet 6 inches wide, assays 3 dwts. 18 grains. The lode in the stope in the back of the 300 south is 4 feet wide, and assays 15 dwts. In two stopes between the 230 and 160 levels north the lode averages 7 feet in width, and 15 dwts. 15 grains in assay value. The 230 south has been driven 14 feet 3 inches, total distance 246 feet 3 inches. The lode, 2 feet wide (mixed), assays 4 dwts. 9 grains. The 230 south rise has been put up 15 feet 9 inches, total height 48 feet 3 inches. Lode 6 inches wide, assays 5 dwts. The 160 south has been extended on the footwall part of the lode 4 feet 6 inches, total distance 429 feet from Kennedy's shaft. The lode, consisting of stringers of quartz, assays a trace of gold. The 95 feet level north from top of rise on footwall part of the lode has been driven 11 feet. Lode 9 inches wide, assays 2 ounces 10 dwts. of gold per ton. North shaft has been sunk 3 feet 9 inches, total depth 30 feet 3 inches below the 600 feet level. Lode 2 feet wide, assays 17 dwts. 12 grains.—Main shaft. The 1160 feet level north has been driven 5 feet from the shaft. The lode 4 inches wide, carries a trace of gold. The 1160 south has been driven 8 feet from the shaft, and the lode 4 inches wide, assays 1 dwt. 6 grains. The 1080 north has been driven 14 feet 9 inches, total distance 359 feet. The lode (part carried) is 6 feet wide, and assays 3 ounces 12 dwts. 12 grains. Owing to fixing of a winding engine for hauling the stuff from the winze in bottom of this level, no sinking has been done since the last report. The rise in the back of this level has been put up 16 feet, total height 46 feet 6 inches. Lode 4 feet wide, assays 1 ounce 2 dwts. 12 grains. In the stope in the back of the 920 south the lode is 4 feet 6 inches wide, assaying 1 ounce of gold per ton, and in the stope in the bottom of the same level it is 5 feet wide, assaying 1 ounce 1 dwt. 6 grains. In the 840 south back stope the lode is 4 feet 6 inches wide, and assays 5 dwts. In the 680 north the footwall of the lode was met with at the commencement of the crosscut east, and the drivage has been extended north 14 feet 6 inches, total distance from main shaft 532 feet 9 inches. Lode of no assay value. The 520 north has been driven 24 feet, total distance 413 feet. The 370 north has been driven 8 feet 6 inches, total distance 146 feet 6 inches. The lode (stringers of quartz) assays a trace.—Taylor's shaft. The 1240 feet level north has been driven 11 feet 6 inches, total distance 231 feet 6 inches. Lode, consisting of stringers of quartz, assays 2 dwts. 12 grains. The 1240 south has been driven 14 feet, total distance 225 feet 6 inches. The lode, 6 inches wide, assays a trace of gold. A winze commenced in the 1160 north, at 60 feet from the shaft, has been sunk 12 feet. The lode, 1 foot 6 inches wide, assays 10 dwts. of gold per ton. In two stopes in the back of the 1000 north the lode averages 2 feet 6 inches in width, and 5 dwts. 15 grains in assay value. The lode in two stopes in the back of the 840 north averages 3 feet in width, and 2 ounces 4 dwts. 9 grains in assay value. In two stopes in the back of the 600 north the lode averages 2 feet 6 inches in width, and 11 dwts. 6 grains in assay value. In the stope in the back of the 520 north the lode is 2 feet 6 inches wide, assaying 12 dwts. 12 grains, and in the 230 south back stope it is 2 feet 6 inches wide, assaying 5 dwts. 18 grains. New shaft has been sunk 12 feet, total depth 54 feet from surface, and the ground is being secured by timberwork as the sinking progresses.—Old mill samples. Pulp, 1 ounce 2 dwts. 12 grains; tailings, 3 dwts. 3 grains.—New mill samples. Pulp, 1 ounce 7 dwts. 12 grains; tailings, 4 dwts. 6 grains.

MOUNT LYELL.—The following is an extract from a letter, dated February 4, from the head office at Melbourne:—"I beg to advise you that Mr. L. C. Clark, C.E., has recently been appointed to take charge of the mine in connection with the system to be adopted in opening it up—namely, that of the open-cut, the importance of the work demanding the appointment of one with engineering experience. Steps are now being taken to open up the mine on the surface ready for the supply of ore by the time the smelters are ready to receive it, and the progress being made with the erection of the latter is most satisfactory. I have much pleasure also in informing you that Mr. Driffield, our railway engineer, reports that he anticipates the whole of the earthworks up to the 15 mile will be completed by to morrow, the work having been pushed on in a most commendable manner. Mr. Knox, who was on a visit to the mine, returned last week, and reports that the work in each department is being carried out with efficiency and despatch, and that the developments in the mine are of a most gratifying character, especialy in No. 4 tunnel south drive, where high grade copper ore assaying 1 dwt. of gold, 16½ ounces silver, and 17 per cent. copper is still being obtained, the face at last report being still in the same high grade ore."

RIPANJI QUICKSILVER AND SILVER.—Manager reports: The machinery for the deep sinking has arrived at the mine. It is expected that the weather will permit resuming dressing almost immediately, when it will be continuously proceeded with, and the regular monthly returns will be again communicated. During the winter mining operations have been vigorously carried on, and important fresh discoveries of ore have resulted.

RICHMOND CONSOLIDATED.—Coolgardie property. The manager, under date of January 29, reports as follows: Richmond shaft. Men are now at work on the underlie. We have not yet drawn the water out of the main shaft as we have no way of storing it. Tanks are ordered for storing the water, but owing to the difficulty of getting iron up the track they have not yet been delivered.

WEMMER.—Milling results for January: Stamps at work, 50; working time, 23 days 3½ hours; tons crushed, 5148; tons crushed per head per day, 4·44; bar gold extracted, 3508·03 ounces; yield per ton crushed, 13·62 dwts.; tailings treated, 3265 tons; bullion from tailings, 1303·20 ounces; concentrates caught, 110 tons; assay value of concentrates, 5 ounces.—Note. The total yield per ton, including extraction from tailings and concentrates, is 19·86 dwts. fine gold. It has been decided to mill a larger percentage of main reef leader, in consequence of which the returns will in future show a decrease.

ROBINSON.—Directors monthly report, January.—Mine. Quartz mined 10,715 tons.—Development. Drives 591 feet, raises 20 feet, crosscuts 215 feet; total, 826 feet.—Main incline shaft (West). Fourth level, driving west on south reef, 7 feet. Fifth level, driving west on south reef, 25 feet. Sixth level, driving east on south reef, 36 feet; raise, 4 feet. Seventh level, driving west on main reef, 8 feet; driving east on south reef, 37 feet; crosscut, 22 feet. Eighth level, driving west on main reef, 33 feet. Ninth level, driving east on main reef, 32 feet; driving east and west on south reef, 58 feet; crosscut, 34 feet. Tenth level, driving east and west on main reef, 52 feet; driving east and west on south reef, 11 feet; crosscuts, 15 feet.—Main incline shaft (east). Fifth level crosscuts, 48 feet. Sixth level, driving east and west on main reef, 46 feet; driving west on south reef, 35 feet; crosscut, 24 feet. Seventh level, crosscut, 32 feet. Eighth level, driving east on main reef, 34 feet; driving east on south reef, 61 feet. Ninth level, driving west on main reef, 35 feet; driving west on south reef, 43 feet. Tenth level, driving west on south reef 38 feet, raise, 16 feet: crosscuts, 40 feet. Total, 826 feet.—Mill. Stamps at work 120, not running time 19 days, tons crushed 10,715, tons per stamp per diem 4·7, gold won from above 6875 ounces 5 dwts.—Chlorination and cyanide works. Gold won from own concentrates (by clorination) 800 ounces, bullion from tailings (cyanide process) 2031 ounces 6 dwts., bullion from slimes (recovered by Rand Central O. R. Company, Limited) 1027 ounces, from own ore 10,733 ounces 11 dwts., gold from concentrates purchased (by chlorination) 1548 ounces 3 dwts.; total, 12,281 ounces 14 dwts.

EXPENDITURE AND REVENUE.
Crushed 10,715 tons.
Working expenditure.

				Cost per ton
Mining account (including mine maintenance)	£8,158 0 9	...	£0 15 2·73	
Milling account (including mill maintenance)	2,258 4 2	...	0 4 2·53	
General maintenance account ...	282 1 10	...	0 0 0·32	
General charges	1,234 8 8	...	0 2 3·65	
	£11,932 15 5	...	£1 2 3·23	
Expenditure on mine development, (including main shafts)	2,852 8 4	...	0 5 3·89	
Ditto on machinery, plant, and buildings	553 13 10	...	0 1 0·40	
	£15,338 17 7	...	£1 8 7·37	
Retreatment account:—				
Working expenses at cyanide and chlorination works ...	2,114 7 9			
Cost of concentrates purchased (including receiving)	5,699 10 1			
	£23,152 15 5			
Profit for month	18,873 6 11			
	£42,026 2 4			

REVENUE.

Gold account (mill), 6875 ounces 5 dwts,...	£24,579 0 0	
Sundry revenue	200 0 0	
		£24,779 0 0
Slimes plant account:—		
7515 tons delivered for treatment to January 31	665 14 11	
Retreatment account:—		
Gold account (tailings), 2031 ounces 6 dwts,...	£6,596 0 0	
Gold account (own and purchased concentrates), 2348 ounces 15 dwts.	£9,686 2 0	
		£16,282 2 0
Plus amount received in excess of book entry for November gold		299 5 5
		£42,026 2 4

The profits on the gold produced at the slimes works has not yet been determined, consequently the company's share will not appear until the February report. The results from the products so far treated have been satisfactory. Scarcity of native labour is felt in all departments.

YERRAKONDA.—Fortnightly report of Captain M. Scantlebury mine agent, dated February 19: South shaft. The 255 feet level south has been extended 24 feet, now 48 feet 6 inches from shaft. The lode is 3 feet 6 inches wide, 2 feet 6 inches in solid quartz, assaying 3 dwts. 6 grains of gold to the ton. 255 feet level north has been advanced 20 feet, now 45 feet from shaft. The lode is 2 feet 6 inches wide, 1 foot 6 inches being solid quartz, assaying 5½ dwts. of gold to the ton.—Prospecting. We are doing a little work to the south of Beresford's shaft on the old native workings.

BRITISH BROKEN HILL PROPRIETARY.—Mining manager's report for the week ending January 29: Blackwood shaft. 300 level. West crosscut from plat extended 10 feet, total length 194 feet; face slightly improved, carrying more sulphide ore. We sorted out 7 tons sulphides, which assayed 21 per cent. lead, 11½ ounces silver, and 24 per cent. zinc.—Howell shaft. 300 level. Westerly crosscut lengthened 13 feet, total from plat 276 feet; face in clean country rock.—200 level. Southerly drive off No. 2 west crosscut driven 7 feet, total 150 feet, and connection completed with the north drive from No. 1 west crosscut. We mined 30 tons sulphides, averaging 24 per cent. lead, 14 ounces silver, and 23 per cent. zinc, No. 1 winze off above (south) drive was sunk 9 feet, total depth 20 feet; bottom showing good grade sulphide ore. We mined 50 tons sulphide, assaying 23 per cent. lead, 12 ounces silver, and 24 per cent. zinc.—Surface. Splendid headway is being made in all branches connected with the erection of jig plant.—Ore shipments. Shipped from mine during week 30 trucks carbonates to Port Adelaide, also seven trucks sulphide ore to Block 14 Mine, Broken Hill. Assays of following two lots have been agreed with Block 14 Company, Point Adelaide, from previous deliveries—viz, 121½ tons (net) carbonate ore from Marsh shaft, containing 26 tons lead, and 4624 ounces silver.—Week's assays. Carbonates, lead 19 to 25 per cent., and silver 25 to 42 ounces per ton; sulphides, lead 17 to 30 per cent., zinc 20½ to 31½ per cent., and silver 9·8 to 14·7 ounces per ton.

CAPE COPPER.—Captain Henwood, January 31:—Ookiep. The stope in bottom of 130 fathom level east of winze is still yielding a little saving stuff. No improvement having taken place in the nature of the rock in the 92 fathom crosscut No. 19 south-west of main east level, it has been suspended, and the men are put to drive west from the bottom No. 2 sink (at the 92) to prove the ground in that direction. The 80 fathom level south-east of No. 16 level for the present is only yielding 1 ton of copper ore per fathom. The 68 fathom level south-east of No. 16 level has, since the last report, produced a little saving stuff; the forebreast is yielding rich stones at the present time, but not sufficient to value. The rock in the drive in back of the 68 fathom level south of stope (south-east of 16 winze) having become unfavourable for copper ore, it has been suspended. The ground in the 58 fathom crosscut south of extreme west level not being very congenial for copper, it has been suspended, and the men are put to drive north for a few fathoms from this point to prove the rock in that direction. In the early part of the month we started two drivings in the 58 fathom level west of the flookan course, one south of 55 winze, and the other north. As no trials have ever been made in this part of the mine, and seeing the flookan course has been driven on for a great length at the 58 north and in the 68 south, but nothing has been done to prove the ground east and west except at the extreme points, we purpose driving a few levels at the most promising points. The rock in the west level north of 55 winze contains a few spots of copper ore. The stopes throughout the mine, on the whole, are yielding well.—Captain Henwood, January 31:—Trial Mines—Nababeep south. The ground in the 59 fathom crosscut north of No. 1 winze is still spotted with copper ore. The rock in the two 74 fathom levels is composed chiefly of quartz.—Spectakel. The 46 fathom level north-west of No. 2 flookan course is yielding saving stuff. The stopes throughout the mine are yielding their usual quantities of copper ore.—Copperberg. Nothing of much value having been met in the 10 fathom crosscut north-west of whim shaft, it has been suspended. In the early part of the month we started another trial shaft, No. 3, situated about 70 fathoms west from Jones' shaft. The ground produces occasional stones of copper ore. The rock in the bottom of No. 2 trial shaft sinking below the 15 fathom level contains spots of copper ore.—Ookiep east. The rock in the 80 fathom level north-west of south-east level is yielding occasional stones of copper ore. The stope in bottom of 66 fathom level south of winze is yielding its usual quantities of low-grade mineral for the smelting works. Returns for January:—Ookiep, 1990 tons of 18 per cent.; Spectakel, 117 tons of 31 per cent. Arrival at Swansea:—The steamship *Ranmoor*, with 2080 tons of ore and 550 tons of regulus.—Tilt Cove—East mine. Output for December, 4311 tons of 3·70 per cent. west assay.

NIEKERK (Klerksdorp).—The general manager's report of work done during the week ending February 15 last is as follows: Winze

No. 1 sunk 2 feet, total depth 77 feet. Flat sheet and two lines of rails to separate dumps. Drifted to east 8 feet, making a total of 13 feet. Winze No. 2 sunk 4 feet, total depth 37 feet. Surface being prepared for erection of whip or of other temporary hoisting gear.—*Prospecting.* A further lode struck in surface excavation north-west from No. 1 winze. Buildings having been taken over, miners moved down to permanent quarters. Manager's house furnished, foreman's residence the old cottage previously occupied by miners.

GINSBERG.—The Johannesburg Consolidated Investment Company (Limited) announce receipt of the following report from the above company:—Mine report for January records a progress of 26 feet in sinking of main shaft, which is now down 320 feet. On the first level from No. 2 shaft the reef averaged 6 inches, panning 22 dwts. per ton, and on the second level the average width of the reef was 3 feet, assaying 1 ounce 7 dwts. 11 grains to the ton. Samples from other parts of the mine also gave good results, and the average was 19 dwts. 7 grains, over an average width of 2 feet 5 inches, and total mine development amounted to 228½ feet. Works in connection with the construction of the new battery, head gear, &c., are progressing well, and the mine is favoured with a good supply of native labour. According to report for week ending February 11 all works are going ahead satisfactorily, and reef widths and values are being maintained.

GLENCAIRN MAIN REEF.—The Johannesburg Consolidated Investment Company announce receipt of the following report from the above company: During week ending February 10 development amounted to 39 feet, the mill crushed 2597 tons of ore. 125 tons of tailings were treated. During January 2370 tons of ore were developed. On the 5th level the average width of reef in stope was 6 feet, and in raise 5½ feet, both assaying fairly well. No. 1 raise on the 6th level was connected with the 5th level. Manager reports the mine as looking well, and he intends pushing forward development on the north reef west as soon as installation of compressor plant is completed (about February 25). The plant has a capacity for the working of 20 drills.

GLENLUCE GOLD.—The Johannesburg Consolidated Investment Company announce receipt of the following report from the above company:—Mine development for period from February 1 to 15 amounted to 165 feet. Reefs continue to look well. In the main reef drift 23 feet were driven last week, which is equal to 102½ feet for the month. This is, of course, very good driving.—*Mine buildings.* Very good progress has been made with the new shops, to be finished by the middle of the month. The new offices are nearly finished. The new store is in the course of erection.

GOLD FIELDS OF LYDENBURG.—The Johannesburg Consolidated Investment Company announce receipt of the following report from the above company. A copy of engineer's comments on assays of samples is going forward to the London agents by this mail. Samples from Sherwell's drive gave excellent results, and if the ore body be proved permanent by works which are in progress the company will be justified in the erection of machinery.

MATABELE SHEBA REEF.—The Rights and Exploring of Rhodesia (Limited) have received the following report from Mr. H. L. Lawrence, the mining engineer:—The most valuable portion of the property is the south-east end. A strong and well-defined quartz reef traverses the ground for about 2000 feet. On the north-eastern end of this there is a line of old workings 150 yards long. In the middle of this a shaft has been sunk 42 feet deep, and has struck the solid reef, which is 7 feet wide, and pans 2 ounces of gold to the ton. This is a most promising body of ore, and has every appearance of being permanent.

NEW HEIDELBERG ROODEPOORT.—The Johannesburg Consolidated Investment Company (Limited) announce receipt of the following report from the above company: Manager has been able to make some progress in mine development and main shaft is now down 597 feet from surface, where the reef is solid and well defined, and showing visible gold. Various surface works are being pushed forward as much as possible. Manager reports discovery of outcrop of a reef which is quite independent of the one now being worked, and an assay sample from reef, width 18 inches, gave 18 dwts.

NEW REITFONTEIN.—The Johannesburg Consolidated Investment Company (Limited) announce receipt of a report from the above company, containing the following:—Manager's report for the week ending February 6 confirms recovery of the middle reef on the seventh level, and we are since informed that the body is about 18 inches thick, assaying over 10 inches from 4 to 14 ounces per ton. Development during the week amounted to 165 feet. Engineer views with satisfaction the reappearance of the reef on the seventh level, which establishes beyond doubt the permanency of the vein.

ROBINSON DEEP.—Extract from manager's report for month of January, dated February 3: No. 1 shaft has been sunk 42 feet, making a total depth of 1362 feet from Collar set and timbered down to a depth of 1350 feet from surface set, No. 2 shaft has been sunk 30 feet, making a total depth of 1442 feet from Collar set and timbered down to a depth of 1432 feet from Surface set.

ROODEPOORT GOLD MINING COMPANY (LIMITED).—The Johannesburg Consolidated Investment Company (Limited) announce receipt of the following report from the above company:—Manager's report for the week ending February 14 states that the reef continues to open up well in the lower level drives. Further connections are being made between the 3rd and 4th levels, and with improvements which are being effected in plant, development will in future progress more rapidly. New compressor plant has been started working; this, to a great extent, does away with native labour for development purposes.

V. V. (Gwanda).—Imani reef. The mining engineer, Mr. H. L. Lawrence, reports as follows, under date of February 10: The old underlie shaft has been sunk to a depth of 106 feet from the surface. I took a careful sample of the whole of the underlie—*i.e.*, from the bottom of the old workings 56 feet from the surface to the present depth of shaft 106 feet. This sample showed 2 ounces of free gold to the ton in the pan. I think it likely that the assay will go 3 ounces to the ton as previous assays have always given about one-third more value than the free gold estimate. The average width of the reef is 3 feet 9 inches. Drives north and south along the reef are now being put out at the 106 feet level. The north drive has been extended 8 feet to date. The following are the pannings, with width of reef at this spot:—3 feet from shaft width of reef 3 feet 6 inches, value 2 ounces 10 dwts.; 4 feet from shaft width of reef 3 feet, value 2 ounces; 5 feet from shaft width of reef 3 feet, value 2 ounces 10 dwts.; 6 feet from shaft width of reef 2 feet 3 inches, value 3 ounces; 7 feet from shaft width of reef 2 feet 3 inches, value 3 ounces; 8 feet from shaft width of reef 2 feet 3 inches, value 5 ounces. The south drive has been driven 5 feet. The following are the pannings here:—2 feet from shaft width of reef 3 feet 6 inches, value 1 ounce 10 dwts.; 3 feet from shaft width of reef 4 feet, value 1 ounce 10 dwts.; 4 feet from shaft width of reef 3 feet 6 inches, value 1 ounce 10 dwts.; 5 feet from shaft width of reef 4 feet, value 1 ounce. I think the above results highly encouraging. We are evidently on a fine shoot of gold, the extent of which will be proved with all possible dispatch.

WOODBINE GOLD.—The Johannesburg Consolidated Investment Company (Limited) announce receipt of a report from the above company containing the following:—64 feet have been risen, driven, and sunk during the month of February.—No. 3 level east. The face of this level is 43½ feet east of No. 1 shaft, 6 feet having been driven during the month. Good ore has been passed through the last assay giving 1 ounce 4 dwts. per ton over a width of 4 feet. The 10 stamp battery has worked 12½ days, crushing 216 tons of ore, which yielded 113½ ounces of gold. Cyanide works treated 142 tons of tailings, the average extraction of which was 5 ounces 12 grains. The total yield of gold for the month amounts to 16 dwts. per ton.

ROYAL COLONIAL INSTITUTE.—Sir Frederick Young, K.C.M.G., will preside at an afternoon meeting in the Library of the Institute on Tuesday next, March 17, at 4 30, when Dr. Charles Chewings, F.G.S., will read a paper on the "Geological and Physical Features of the Coolgardie Gold Fields."

MYSORE GOLD FIELDS.—The gold mining industry at Kolar has developed at a marvellous rate of progress, the production in six years having increased to the extent of 145 per cent.

EXPORT AND IMPORT TRADE.

THE BOARD OF TRADE RETURNS—FEBRUARY TABULAR STATEMENT.

Specially compiled for "The Mining Journal" from the Board of Trade Returns.

THE Board of Trade Returns show the Imports to have amounted to £35,476,736, against £28,134,499 for February, 1895, an *increase* of £7,342,247. For two months ended February 29, 1896, the Imports were £73,950,592, against £64,877,970 for the corresponding period last year; an *increase* of £9,072,622. The Exports for February totalled £19,633,456, against £15,973,095; an *increase* of £3,710,361. For the two months, January and February, they amounted to £40,810,624, against £34,197,331; an *increase* of £6,613,293. The Exports of Foreign and Colonial Merchandise for February were £5,638,222, against £4,407,824; an *increase* of £1,230,408, and for the two months ended 29th ult., £10,463,939, against £8,295,082 for January and February 1895; an *increase* of £2,168,857.

EXPORTS:—SUMMARY OF INCREASES AND DECREASES.

Principal and Other Articles	Quantities. Increase.	Quantities. Decrease.	Value. Increase	Value. Decrease
Raw Materials:				
Coal and Patent Fuel ... Tons	416,935	—	103,654	—
Coal, &c., shipped for steamers' use ... ... Tons	6,433	—	—	—
Metals:				
Brass, and manufactures of Cwts.	3,174	—	11,695	—
Copper, unwrought and wrought ... ... Cwts	55,076	—	135,756	—
Hardware and cutlery £	—	—	31,662	—
Implements and tools, and parts thereof ... £	—	—	26,984	—
Iron, unwrought and wrought Tons	79,516	—	433,331	—
Lead, pig, rolled, &c. ,,	470	—	7,691	—
Plate, and plated gilt wares £	—	—	—	703
Telegraph Wires, &c. £	—	—	100,429	—
Tin, unwrought ... Cwts.	4,701	—	14,852	—
Zinc or Spelter ... ,,	4,489	—	2,371	—
Other Articles ... £	—	—	13,921	—
			778,702	703
Total	—	—	703	—
			777,999	—
Machinery:				
Steam engines	—	—	37,919	—
Other descriptions	—	—	213,140	—
			251,059	—
Total	—	—	—	—
			251,059	—
Alkali ... ... Cwts.	—	—	—	—
Cement ... ... Tons	13,265	54,729	22,411	8,974
Products of Coal ... £	—	—	69,136	—

EXPORTS:—BRITISH AND IRISH PRODUCE.

Principal and Other Articles.	Quantities. Month ended Feb. 29. 1895.	Quantities. Month ended Feb. 29. 1896.	Values. Month ended Feb. 29. 1895. £	Values. Month ended Feb. 29. 1896. £
Metals and Articles Manufactured therefrom (except Machinery):—				
Brass, and Manufactures of, not being Ordnance	7,856	11,030	29,965	41,660
Copper: Unwrought, in Ingots, Cakes, or Slabs, and Precipitate:				
To Germany	2,124	9,232	4,495	20,998
,, Holland	7,811	13,244	16,932	31,104
,, Belgium	1,579	3,673	3,283	8,810
,, France	17,114	14,075	36,869	32,258
,, Italy	1,808	1,000	3,880	2,100
,, British East Indies ...	91	125	205	316
,, Other countries	1,875	9,619	4,172	22,279
Total	32,402	50,988	69,836	117,863
Wrought, or Manufactures, unenumerated:				
To Sweden and Norway ...	253	914	799	2,797
,, Germany	451	720	1,340	1,905
,, Turkey	2,292	3,631	5,991	8,069
,, Egypt	1,534	3,435	3,940	9,325
,, Brazil	1,176	1,224	3,194	3,569
,, British East Indies ...	6,544	16,993	15,841	42,448
,, Australasia	637	1,555	2,018	4,499
,, Other countries	5,592	10,184	15,250	28,033
Total	18,649	38,116	48,353	100,645
Mixed or Yellow Metal:				
To China and Hong Kong ...	808	3,584	1,690	7,817
,, British East Indies ...	9,201	21,396	19,811	44,370
,, Other countries	4,181	6,053	9,594	14,355
Total	14,190	31,033	31,095	66,542
Total of Copper	65,141	120,117	149,284	285,050
Hardware and Cutlery ...	—	—	12,487	136,149
Implements and Tools, and parts thereof	—	—	77,688	104,672
Iron and Steel: Pig-iron:	Tons.	Tons.	£	£
To Russia	36	313	130	1,362
,, Sweden and Norway ...	974	1,996	1,946	4,618
,, Denmark	30	213	79	651
,, Germany	517	3,711	939	12,726
,, Holland	3,816	12,350	8,111	27,770
,, Belgium	3,417	4,836	7,318	15,332
,, France	2,472	1,029	5,819	2,664
,, Portugal, Azores, & Madeira	40	205	84	501
,, Spain and Canaries ...	89	319	176	1,446
,, Italy	6,831	7,373	14,705	15,928
,, United States	945	2,971	2,810	14,748
,, Australasia	2,066	199	4,476	645
,, British North America ...	75	404	209	1,200
,, Other countries	4,277	11,760	11,430	23,932
Total	25,385	52,669	59,082	129,963
Bar, angle, bolt, and rod ...	9,582	11,727	69,717	74,864
Railroad of all sorts	29,732	57,174	116,041	273,355
Wire, iron and steel &c. ...	2,795	4,564	51,283	75,199
Hoops, plates, boiler plates, &c.	6,665	7,057	92,945	92,398
Galvanised sheets	12,416	21,740	134,699	256,978
Cast and wrought iron, &c. ...	18,451	28,181	238,864	349,352
Old, for re-manufacture ...	3,679	7,901	9,819	21,389
Steel, unwrought	11,192	21,537	111,059	186,744
Black plates for tinning ...	2,077	4,555	19,405	46,262
Manufactures of steel, or of iron and steel combined ...	2,513	1,755	48,064	48,823
Total of iron and steel (including tin plates and sheets)... ...	157,830	237,346	1,291,758	1,728,089
Tin Plates and Sheets:				
To Russia	1,411	963	16,995	11,586
,, Germany	238	469	3,105	5,836
,, Holland	304	674	2,829	6,959
,, France	2,962	946	36,529	11,360
,, Portugal, Azores, and Madeira	383	455	4,831	5,384
,, Italy	261	132	3,150	1,669
,, Roumania	60	391	768	4,540
,, United States	23,201	3,980	269,019	79,878
,, Brazil	338	460	3,849	5,132
,, Argentine Republic ...	39	899	437	10,105
,, British East Indies ...	714	1,654	8,558	18,692
,, Australasia	795	1,396	9,181	15,489
,, British North America ...	473	1,122	5,357	11,861
,, Other Countries	2,156	1,909	25,062	22,555
Total	33,339	18,454	390,480	213,045
Lead: Pig Sheet, Piping, and Manufactures:	Tons.	Tons.	£	£
To Russia	49	148	504	1,748
,, Germany	59	34	579	428
,, China and Hong Kong ...	216	821	2,107	9,459
,, Japan	167	236	2,273	3,545
,, United States	125	115	1,300	1,263
,, British East Indies ...	846	799	13,068	12,323
,, Australasia	13	73	176	939
,, British North America ...	48	86	502	1,122
,, Other countries	515	498	9,188	6,543
Total	2,338	2,809	29,679	37,370

BRITISH AND IRISH PRODUCE—*Continued.*

Principal and Other Articles	Quantities. Month ended Feb. 29. 1895.	Quantities. Month ended Feb. 29. 1896.	Values. Month ended Feb. 29. 1895. £	Values. Month ended Feb. 29. 1896. £
Plate & Plated & Gilt Wares	—	—	19,070	18,367
Telegraphic Wires, & apparatus connected therewith ...	—	—	9,411	109,840
Tin, Unwrought:	Cwts.	Cwts.	£	£
To Russia	489	1,788	1,589	5,674
,, Sweden and Norway ...	271	631	901	2,014
,, Germany	440	1,193	1,391	3,753
,, France	1,215	1,722	3,802	5,447
,, Turkey	489	694	1,616	2,224
,, United States	420	202	1,366	657
,, British North America ...	276	294	904	936
,, Other countries	3,024	4,80.	9,731	15,444
Total	6,624	11,325	21,300	36,152
Zinc or Spelter: Unwrought and Wrought	14,551	18,840	9,367	11,738
Total of Principal Articles ...	—	—	1,765,009	2,529,087
,, other Articles	—	—	46,984	60,885
Total of Metals and Articles Manufactured therefrom (except Machinery)	—	—	1,811,973	2,589,972
Alkali	294,760	340,031	99,840	90,666
	Tons.	Tons.		
Cement	14,347	27,612	23,180	45,591
Products of coal (including paraffin, petroleum, &c.) ...	—	—	105,075	174,211

MACHINERY.

Mining: (Not Steam Engines.)	Feb. 1895	Feb. 1896	2 months '95	2 months '96
To Countries in Europe ...	£ 931	£ 771	£ 2,572	£ 3,175
,, United States	581	—	581	92
,, Countries in South America	2,667	7,372	5,321	11,864
,, British Possessions in S. Africa	15,035	51,841	55,042	101,534
,, ,, East Indies	2,748	3,448	5,463	8,116
,, Australasia	2,758	20,014	6,569	41,219
,, Other Countries	2,151	885	5,465	4,652
Total	26,921	84,331	81,013	170,662
Total of Machinery other than Steam Engines	207,182	1,020,302	1,748,303	2,118,221
Total of Steam Engines ...	153,803	191,722	334,079	430,218
Total of Machinery and Mill Work	£966,965	£1,212,024	£2,082,382	£2,548,439

EXPORTS OF FOREIGN AND COLONIAL MERCHANDISE.

Principal Articles.	Quantities. Month ended Feb. 29. 1895.	Quantities. Month ended Feb. 29. 1896.	Values. Month ended Feb. 29. 1895. £	Values. Month ended Feb. 29. 1896. £
Copper:	Tons.	Tons.	£	£
Unwrought and part wrought	467	846	20,180	38,525
Iron and Steel:				
Bar, angle, bolt, and rod ...	607	661	4,798	5,125
Steel, unwrought	151	423	1,412	3,355
Manufactures:				
Girders, beams, and pillars ...	134	31	1,057	193
Unenumerated	Cwts. 31,863	Cwts. 65,217	22,397	46,759
Petroleum	Gals. 595,400	Gals. 112,400	8,924	3,796
Quicksilver	Lbs. 153,140	Lbs. 213,175	13,030	19,635
Saltpetre	Cwts. 2,619	Cwts. 2,783	2,375	2,411
Tin, in blocks, ingots, bars, or slabs	43,056	31,555	131,164	97,168

IMPORTS.

SUMMARY OF INCREASES AND DECREASES.

Principal and Other Articles.	Quantities. Increase.	Quantities. Decrease.	Value. Increase.	Value. Decrease.
Metals:			£	£
Copper: Ore ... Tons	3,296	—	36,370	—
Regulus ... ,,	—	261	—	19,850
Unwrought and part wrought	410	—	30,916	—
Iron: Ore ... ... ,,	153,413	—	100,253	—
Bar ... ... ,,	862	—	8,569	—
Steel, unwrought ,,	191	—	2,433	—
Lead: Pig and sheet ... ,,	6,019	—	79,147	—
Pyrites of iron or copper ,,	3,320	—	13,795	—
Quicksilver ... Lbs.	402,143	—	49,191	—
Silver Ore	—	—	8,124	—
Tin, in blocks, &c. ... Cwts.	695	—	2,778	—
Zinc, crude ... ... Tons	3,515	—	40,942	—
Other Articles	—	—	10,336	—
			382,954	19,850
			15,850	—
Total	—	—	367,104	—
Chemicals:				
Alkali ... ... Cwts.	3,476	—	2,689	—
Brimstone ... ... ,,	16,190	—	1,538	—
Saltpetre ... ... ,,	17,547	—	14,322	—
Iron Manufactures:				
Beams, girders, &c. ... Tons	3,977	—	24,982	—
Unenumerated ... Cwts.	144,449	—	97,034	—
Zinc Manufactures ... ,,	9,735	—	9,499	—

FOREIGN AND COLONIAL PRODUCE.

Principal and Other Articles.	Quantities. Month ended Feb. 29. 1895.	Quantities. Month ended Feb. 29. 1896.	Values. Month ended Feb. 29. 1895. £	Values. Month ended Feb. 29. 1896. £
Copper:	Tons.	Tons.	£	£
Ore:—From Spain	2,780	2,400	9,748	8,255
,, Italy	—	425	—	2,125
,, United States ...	51	39	867	680
,, Venezuela ...	—	—	—	—
,, Chili	850	1,402	2,244	14,500
,, Cape	—	2,242	—	22,420
,, British N. America	—	—	—	—
,, Other countries ...	188	682	3,259	7,106
Total	3,869	7,186	16,716	53,086
Regulus and Precipitate:				
From Portugal	930	—	27,665	—
,, Spain	4,637	3,664	133,244	95,208
,, United States	780	1,648	22,458	44,515
,, Chili	56	183	1,490	4,417
,, Other countries ...	32	692	842	19,709
Total	6,452	6,192	175,692	159,842
Unwrought and part Wrought:				
From United States ...	1,538	2,075	63,314	82,255
,, Chili	1,101	1,403	43,844	62,417
,, Australasia	453	532	18,957	24,150
,, Other countries ...	875	367	36,118	14,307
Total	3,967	4,377	162,243	183,159
Iron and Steel:				
Iron ore { From Spain ...	226,008	398,943	146,333	258,998
Iron ore { Other countries ...	70,680	51,138	58,290	45,878
Total	296,688	450,081	204,623	304,876
Iron, bar, angle, bolt, & rod ...	1,756	2,618	13,448	22,017
Steel, unwrought	396	587	2,717	6,150
Lead, pig and sheet	9,835	15,874	94,985	174,133
Pyrites of iron or copper or sulphur	44,899	48,219	72,795	86,590
	Lbs.	Lbs.		
Quicksilver	1,250,080	1,652,223	106,303	157,594
Silver Ore	—	—	99,718	107,842
Tin, in blocks, ingots, bars, or slabs:	Cwts.	Cwts.		
From Straits Settlements ...	51,800	45,760	160,583	139,979
,, Australasia	3,240	7,931	9,742	24,579
,, Other countries	3,446	5,490	7,804	16,424
Total	58,486	59,181	178,204	180,982
Zinc, crude in cakes ... Tons	3,337	6,552	44,612	85,654
Total of principal articles ...	—	—	1,175,656	1,531,294
,, other articles	—	—	127,697	136,033
Total of metals	—	—	1,303,753	1,669,657

NOTES FROM ANDALUCIA.

PAPER ON THE CUPREOUS PYRITES DEPOSITS OF ANDALUCIA AND ALGARVE.

RETROSPECTIVE AND PROSPECTIVE.

Extracts and Notes from Mining Operations and Reports on these during the past 25 years.

By WILLIAM GUTHRIE BOWIE.

(*Continued from page* 290.)

THE affinity which sulphur and copper have for each other at certain temperatures, and for forming sulphides of copper as kernels in the lumps of ore, when treated by calcination, is one of the evils, for all these sulphides are practically lost, while all the sulphur contents are lost, and that of iron practically useless owing to these kernels of sulphides of copper, &c., while damage is done all around by the sulphur smoke which causes a heavy item of expense to the companies and landowners generally, and all, so to speak, just to destroy the constituents of the ore for other uses, and lose the half of the copper contents as well, for the richer the ore in copper the greater is the proportion of this retained as sulphides.

The description of the constituents of this ore will show how impossible it is to apply such a system of treatment to obtain its copper, as this exists in a variety of combinations, and that one most abounding is the very one this calcination alters from the suitable combination it has in its natural state to form sulphate of copper, to one that resists such reduction.

Thus, where calcination is used from one-third up to one-half of the copper contents are altered, and lost in the ordinary ore, and much higher proportions in the richer copper portions.

Formerly the object was to form sulphides, and then pick out these kernels, but this in such masses of poor ores was found so expensive that it was abandoned, the last to do so being Rio Tinto; also washing in tanks is abandoned. No doubt these sulphides of copper in time will weather to sulphate, but this is a question of many years, as those formed in some heaps 40 years ago are still found as compact as when first reduced to this state by calcination, hence practically lost.

Allowances must also be made for losses in copper carried away in the liquors, as it is the habit to let the liquors leave the cementation canals with a strong trace of copper, while heavy floods, continued rains, &c., add to this loss—(see *The Mining Journal* and works of Mr. J. H. Collins, referred to)—while there are further losses in the manipulation of the precipitate, its transport, export, and smelting, and the allowances made to smelters.

Thus it will be observed that again we must take the tons of ore treated as our guide, irrespective of the contents in copper, and it will also be evident there are opportunities to improve on this process, as it is evident from the general averages in some mines that half of the copper contents of the ore has been lost in the ways mentioned (see remarks on French Company, Tharsis, and the 191·676 tons of copper in heaps of Rio Tinto). Formerly this ore was broken by hand, but now the large companies have stone breakers and crushers at the pits or open casts, and the ore is tipped and prepared in these and automatically passed into wagons, and hence goes at once to the calcination heaps without further handling, and at considerable economy. It is also difficult to estimate the charge against the ore for purchases of land and damages by the sulphur smoke, but numerous cost sheets for these operations of calcination seem to indicate an average cost of 9d. per ton of ore—which on 100 tons is equal to £3 15s.—and 1 ton of copper, while if more copper is produced as 2 per cent. Cu or 3 per cent. Cu as in the other cases, then £2 10s. and £1 5s. per ton of copper accordingly.

Thus 100 tons of ore, no matter the copper contents, will now have cost—

	£	s.	d.
By purchase and exploitation by open cast	31	12	11
" " by pillar and stall ..	44	0	5
" " difficult overhead stoping	36	19	7
" " ordinary "	35	3	9
By royalty on the ton of ore and exploitation by open cast	32	11	8
" " by pillar and stall ..	42	0	0
" " difficult overhead stoping	37	18	4
" " combined "	35	10	8

While the cases of royalty on the copper produced or those on shares in profits or paid-up shares, having no outlay or purchase as yet, are as follows:—

	Per 100 tons of ore. £	s.	d.
By share in profits or paid-up shares and exploited by open cast	24	5	0
" " pillar and stall	33	13	4
" " difficult overhead stoping	29	11	8
" " combined "	27	4	0

Connected with calcination there is the process Deetsch and modifications of this, but this being now abandoned is not necessary to calculate here, but this is in use in some other parts of the world but on a different class of copper ore. It may be also noted it is probable that calcination will also be altogether abandoned here, as is now the case in Tharsis. It always has been abandoned in Santo Domingo and numerous other mines, so that in future it will thus become a thing of the past, together with its abandonment, causing great economy, producing more copper from the contents of the ore, and preserving the sulphur, iron, silver, gold, &c., for future commercial uses and new discoveries for their recovery.

2nd. The treatment by exposure in the natural state and precipitation of the sulphates formed. This method is a very ancient one, as has been noted, and is the one upon which even the spoilt ores from calcination have ultimately to depend to reduce the sulphides of copper formed by this calcination, to soluble sulphates, as all know, under very increased difficulties to do so. The ore is prepared as noted under calcination and tipped to the deposits at once, and requires no future handling as in calcination. There are no sulphur smoke damages, all the constituents of the ore are preserved for future uses, and the copper content is practically all obtained, and in a shorter time than by calcination, even in the most refractory cases. (See observations of that recovered in Santo Domingo.) In passing it may be observed that the ores from mines that have no hypogene rocks near them yield a little quicker to atmospheric agencies on their exposure to form sulphate of copper, while those with any such rocks in contact as Rio Tinto, Castillo de las Guardas, Poderosa, Beutron, Lapilla, &c., have more sulphides, and give more resistance to such agencies; hence calcination of the ore of such mines is a still greater drawback to obtain their copper contents than a necessity.

This slight difference is also another proof that these deposits of ore were existing previous to the event of their elevation and metamorphism by such hypogene rocks, and nowhere is the concentration as sulphides of copper stronger than in Rio Tinto and Castillo de Las Guardas and Poderosa, where they are so intimately interested with hypogene rocks, a proof of the influence of such rocks in concentrating the copper contents of these masses of ore in some portions of them, according to magnetic influences, magnetic electric, thermal, or thermo or electric currents developed by heat, &c. (See thermo-dynamics, electricity, &c., of the author's, referred to at the beginning of this paper.) This interesting matter will be noticed in treating on manganese ores and copper pyrites lodes.

(*To be continued*).

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (March 12):—The mining market is without any change. The tin standard has not improved on the reduction of stocks; prices much the same. Quotations:—Basset Mines, 1¼ to 1½; Carn Brea, 16s. to 17s. 6d.; Devon Consols, 20s. to 21s. 6d.; Dolcoath, 16s. to 16s. 6d.; ditto, 4s. to 4s. 3d.; East Pool, 2½ to 2¾; Killifreth, 6s. to 6s. 6d.; Levant, 4¾ to 5; Polberro, 11s. to 12s. 6d.; Tincroft, 1½ to 1¾; West Kitty, 2½ to 2¾; Wheal Grenville, 7 to 7¼; Wheal Kitty, ⅛ to ¼; Wheal Metal, 4s. to 5s.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers and Mining Share Dealers, Redruth, write under date of March 12:—A quiet market all the week, and at the moment there is no disposition either to buy or sell. Quotations herewith, but they are mostly nominal:—Blue Hills, 1s. to 2s.; Basset Mines, 1 to 1¼; Carn Brea, ¼ to 1; Dolcoath (fully paid), 15s. to 16s.; ditto (5s. paid), 4s. to 5s.; East Pool, 2½ to 3; Killifreth, 6s. to 6s. 6d.; Polberro, ¼ to ½; South Crofty, ⅛ to ¼; Tincroft, 1½ to 1¾; West Kitty, 2 to 2¼; Wheal Grenville, 6 to 6¼; Wheal Kitty, ⅛ to ¼; Wheal Metal (3s. paid), 3s. 6d. to 4s. Tin, 60¼.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write, March 12 (noon):—The railway markets have experienced a small wave of depression during the past week, all departments sharing more or less, but home rails are not without contradictions, these, however, being few and, in most cases, small in amount. In the latter, Berthas stand well to the front with advance of ⅜, followed by Midlands, with ⅜ to ½ up. Scotch stocks have declined, principally British New Ordinary, which quote 2½ down. Great Northern A, too, are marked 1½ lower, but the rest of the declines are in fractions, and generally small at that. Canadians and Americans all lower, but in many instances the latest figures are above the worst of the week. Consols have put on a further 3-16 on the week, and Corporation Stocks, &c., are still better on the few changes marked. Foreigners, too, on balance, are better on the majority of the alterations reported. Industrials of the better class continue in demand, and figures, as a rule, show upward movements in large majority. Turning again to the Railway Markets, we now go to the daily details. Friday last found markets easy for both home rails and Americans, whilst Canadian issues and Mexican rails were unaltered. Demand was set up for shares in iron companies, as well as all industrial investment stocks and shares. Saturday nothing of importance to chronicle either in business doing or in change of prices. On Monday a stronger feeling was apparent in home rails and better figures were the rule. Americans began pretty well and remained so for most of the day, but towards the close a small setback came on; Canadians as well as Mexicans were not attended to at all. On Tuesday the chief factor in the market for home rails was the Caledonian dividend announcement which had been looked forward to with varying estimates. Coming as it did with 5¼ per cent. (on the undivided stock) it was rather a disappointment, and consequently Scotch stocks were put lower, followed by a sympathetic move on home rails generally. In Canadians, trunk issues gave way on their traffic. Americans gained a little strength of tone, though actual quotations were not advanced to any appreciable extent. The opening yesterday was not much different from the close of the previous evening, and nothing much occurred during the day save a decline in North British, on doubts as to the dividend not coming up to sanguine expectations. This morning the market had no distinct tone in either direction up to writing. Changes on the day will be given later.

CONSOLS.—Higher: Two and Three-quarter per Cent., 3-16.

COLONIAL STOCKS, &c.—Higher: Cape of Good Hope Registered, 1; ditto Inscribed, 1; Victoria Inscribed, ½.

CORPORATION STOCKS AND DEBENTURES.—Higher: Douglas Three and a-Half per Cent., ⅛ to 1½; Manchester Four per Cent., 1½.

FOREIGNERS.—Higher: Argentine Six per Cent., ¾ to 1½; Brazilian Four and a-Half per Cent., 2; Italian Rentes, 2; Mexican, ½; Turkish, 1891, 1.—Lower: Argentine Five per Cent., ½; Uruguay Three and a-Half per Cent., ¼ to ½.

BANKS.—Higher: London and Midland, ½; Manchester and Liverpool District, ½; National Provincial, ½; Parr's, ½.—Lower: Bank of Liverpool, ½; W. D. and Manchester and Salford, ½.

INSURANCE.—Higher: Equitable Fire, 6d. to 1s.; Lancashire, 1-16 to ⅛; Liverpool, London, and Globe, ⅛; Manchester Fire, 1-16; Union Marine, ⅛; Times Mutual, ⅛.—Lower: British and Foreign Marine, ⅛ to ¼.

COAL, IRON, &c.—Higher: Bolckow Vaughan (£12 paid), ½; Cammells, 1; Parkgates, 2; Sharp Stewarts, 2.—Lower: Bolckow Vaughan (£20 paid), ½; John Browns, ⅜.

TELEGRAPHS AND TELEPHONES.—Higher: Telegraph Construction, 2.—Lower: Anglo-American Deferred, ½; Western and Brazilian Deferred, ½.

BREWERIES.—Higher: Allsopp's, 1.

MINES.—Higher: Mysore, 7-16.—Lower: Chartered, ⅜; Gold Fields, ⅜ to ½; Darien A, ⅜; De Beers, ⅜; Rio Tintos, ⅜.

MISCELLANEOUS.—Higher: Earle's, 1; Lever Bros., ½; Manchester Carriage A, 1; ditto B, ½; ditto C, ½; Star Paper, ½; Sir J. Whitworth, ½; Liverpool United Gas A, 2.—Lower: Howard and Bullough, ½ to ¾; Manchester Palace of Varieties, 1s. to 1s. 6d.; Pacific Steam, ½; Gaslight A, 1 to 3; Imperial Continental Gas, 2; Manchester Trust, 6d.; Northern Assets, 6d.; Railway Debenture Trust, ½.

LATER (4 P.M.).—The North British dividend, giving 1½ per cent. on the deferred, has been the only feature to-day, but it had little or no effect on the market generally, the only changes in home rails being advances (in fractions) in Caledonian, Berthas, and Sheffield A. The last two are notable—in the case of the Berthas as coming after a decent advance, and in Saras as a "pluck up" after a fair decline. Americans a poor market till afternoon, when figures improved. Canadians little doing; the same in Mexicans. The South African showed stronger during the day.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (March 12), writes:—During the past week there has been less business doing, and prices do not show much alteration. The fortnightly settlement was arranged at moderate rates of continuation to new account, March 27. Trade reports are generally good.

In shares of coal, iron, and steel companies prices are steady. Calderbank Steel are at 55s.; Merry and Cuninghame Preference, 14½; Marbella, 43s. 6d.; Niddrie, 39s.; and Steel Company of Scotland, 99s.

In shares of copper concerns prices are generally lower in sympathy with the market for the metal. Arisona are at 47s.; Copiapo, 45s. to 50s.; and Mason, 57s. 6d. Tinto touched 17½, and Tharsis 10½, but have both recovered a little.

In shares of gold and silver mines there has been a fair amount of busines doing. Business is restricted until the labour troubles in the Rand are arranged, and the political situation cleared up. The output for February has, however, been fairly satisfactory. The principal dealings have been in Chartered, which declined to 20s. on sales to close account, but have recovered to £5. Consolidated declined to 12½, East Rand to 5 15-16, and Randfontein to 54s. 6d., but are now all better. Indian mines have been good, especially Mysore, which are up to 5 9-16 ex div. This mine is said to be getting into richer ground. West Australians have not been much dealt in, bet if the crushings at Hannan's Brownhill and Mainland Consols expected at the end of this month turn out well, there should be more dealings in this market. Afrikander are at 26s. 3d.; African Estate, 45s.; African Recovery, 35s.; Appalachian, 1s.; Aurora West United, 27s. 6d.; Blue Spec, 9s.; Broken Hill, 50s.; Blagroves, 4s. 3d.; Bonnie Dundee, 5s. 6d.; Caratal, 1s.; Consuello, 17s. 6d.; Cumberland 1s. 3d.; Crown, 36s. 3d.; Charterland, 17s. 6d.; De Lamar, 17s.; Don Pedro, 1s.; Doornkop, 5s. 6d.; Emma, 2s. 6d.; Graskop, 6s.; Gwelo, 3s.; Guadalcazar, 4s.; Golds Field of Mozambique, 21s. 3d.; Hauraki, 17s.; Hit or Miss, 13s.; Harquahala, 5s. 6d.; Joe's Reef, 5s.; Jackson, 1s.; Kempinkote, 1s.; Koumati, 5s. 3d.; Kathleen, 4s. 3d.; Kalgurlie Great Western, 10s.; Longlaagte Star, 46s.; Londonderry Consols, 3s.; Lindsays, 10s; Mysore Wynaad, 24s. 6d.; Murchison New Chum, 7s. 9d.; Murchison Gift, 1s. 6d.; Murchison Gold Fields, 6s. 9d.; New Hauraki, 6s. 6d.; New Queen, 6s. 3d., Orient, 9s. 3d.; Ouro Preto, 4s.; Oceana, 37s.; Robinson Randfontein, 18s.; Rhodesia (Limited), 30s.; Rhodesian Mining and Finance, 9s. prem.; Rothery Block, 8s. 9d.; Spes Bona, 30s.; Sheba Queen, 4s. 9d.; Sam's Wealth of Nations, 3s. 6d.; Tehuantepec, 1s. 9d.; Thistle Reef, 10s. 2d.; Tiger (Massi Kessi), 9s.; Torva Exploring, 25s. 6d.; Victory Preference, 1s. 6d.; Vaughan Williams Rhodesia, par; and Wentworth, 24s.

In shares of local and miscellaneous there is not much alteration to notice. In oil companies, Broxburn are at 9⅞, Pumpherston 7, and Young's 30s. Nobel's Dynamite, 15⅝.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of March 12:—Since last week's report, the dealings in home railways have been principally in Caledonian Deferred Converted and North British, whose dividends have now been announced. The price of the former has gone down from 56½ to 56 3-16, and the price of the latter from 47⅝ to 45¼. In insurance shares the changes are few, National Guarantee having receded from 70s. to 69s., Scottish Union B have advanced from 16½ to 16 11-16. In banks, Commercial have risen from 74 to 74½, National from 350 to 353. The shares of some of the coal companies are lower. Cowdenbeath have declined from 16½ to 16¼, Fife from 17½ to 17¾. Steel Company of Scotland shares are 1s. 6d. lower at 97s. 6d. Arizona Copper shares are 3d. higher, at 47s. 9d. Rio Tinto 17s. 6d. lower at 18. Broxburn Oil 2s. 6d. lower, at 9 13-16. Wm. Younger and Co. Preference shares have risen from 138 to 140, New Zealand and Australian Land from 82½ to 85. Edinburgh and District Tramway Preference from 7 7-16 to 7¾, Edinburgh Street Tramways from 77s. to 80s., Scottish Assam Tea shares from 10½ to 11.

FOR SALE.

"*" Prepaid Advertisements are inserted in this column at the rate of 8d. per line with a minimum charge of 4s.

GREAT HOME MINING ENTERPRISE.

THE RICHEST AND MOST PRODUCTIVE COPPER MINES IN THE KINGDOM.

THE MINERAL RIGHTS will be SOLD, or a LEASE thereon GRANTED in PERPETUITY at a Nominal Rent, and a small Royalty on actual Profits realised.

THE MINES CAN BE DEVELOPED ENTIRELY BY WATER POWER.

BETWEEN £300,000 and £400,000 in PROFITS have been realised, with the most primitive and effete Machinery and Appliances, yet the ores realised more than twice the average of Cornish ores. There are many large lodes traversing the Property, one of the Trunk Lodes being 60 feet wide, filled with Rich Sulphuret of Copper,

THE PROPERTY IS 180 ACRES IN EXTENT.

£20,000 a year and upwards could, with the aid of Modern Mining and Concentrating Appliances, be realised.

The Owner desires the co-operation of a Gentleman of influence or capital, or a Purchaser.

Apply for full particulars to "FREEHOLD," care of MINING JOURNAL Office, 18, Finch Lane, London, E.C.

STAMP BATTERY FOR SALE AT CUE, MURCHISON GOLD FIELDS, WESTERN AUSTRALIA.

THE DIRECTORS of the BRITISH WESTERN AUSTRALIAN GOLD CRUSHING SYNDICATE (LIMITED) are prepared to consider proposals for the PURCHASE of the TWENTY-HEAD STAMP BATTERY adjoining the proposed railway station at Cue, erected for this Syndicate for public custom by Messrs. Fulton and Co., of Adelaide, along with all buildings, stores, &c. The battery is in first-class order, and the engine is of 210 horse-power, by Messrs. Robey and Co., Lincoln, and will suffice to drive 40 head of stamps.

The Directors are prepared to SELL the Battery outright for cash, or to amalgamate the concern with a sound, payable mine in the district, taking payment partly in shares and partly in cash.

This forms an exceptionably favourable opportunity to mine-owners for obtaining an efficient plant without the expenditure of a large sum of working capital.

Copies of specification of the machinery, inventories, stores, &c., can be had on application to Messrs. MANN, WRIGHT, and Co., C.A., 48, Copthall Avenue, London, E.C., or to the Subscribers.

JOHN MANN AND SON,
Chartered Accountants.

188, St. Vincent Street, Glasgow, 14th March, 1896.

FOR SALE, TWIN RELIANCE AIR COMPRESSOR, by Hathorn and Co., London; Steel Receiver for same; all in first-class condition; 2 large BOILERS, recently overhauled. Full particulars and prices on application.

Apply, TAVY IRON AND ENGINEERING WORKS (Limited), Tavistock.

N.B.—Estimates furnished for all kinds of Mining Machinery, both New and Second-hand.

TO BE SOLD, BY PRIVATE TREATY, WEST TRELOGAN LEAD MINE, Flintshire.

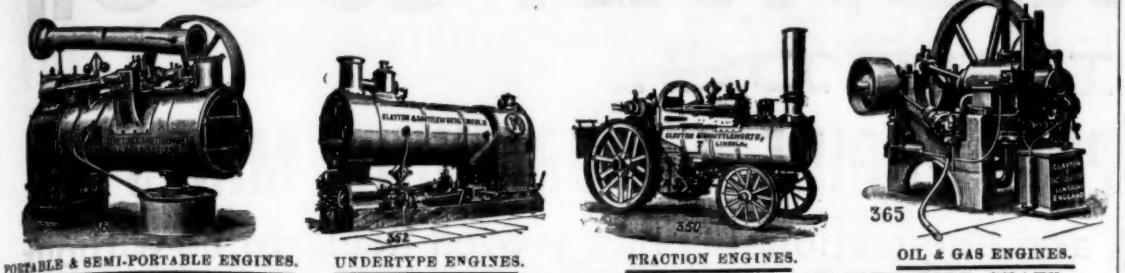
Particulars from Mr. PIERCE, Trelogan Hall, Holywell, on the Mine, or R. EVANS, Secretary, Slate Works, Rhyl.

WATERFALL and FLINT QUARRY, on the West Coast of Norway, TO BE SOLD.

Apply, ROTH BROTHERS, Stavanger, Norway.

CLAYTON and SHUTTLEWORTH,

LINCOLN, & 95, QUEEN VICTORIA STREET, LONDON.



PORTABLE & SEMI-PORTABLE ENGINES. UNDERTYPE ENGINES. TRACTION ENGINES. OIL & GAS ENGINES.

ALSO FIXED ENGINES, CORNISH BOILERS, THRASHING MACHINES, STRAW ELEVATORS, CHAFF CUTTERS, MAIZE SHELLERS, GRINDING MILLS, SAW BENCHES, CENTRIFUGAL PUMPS, &c.

UPWARDS OF *59,000 ENGINES* and *THRASHING MACHINES* MADE and SOLD.

CATALOGUES FREE by POST to any PART of the WORLD.

☞ Owing to increased facilities CLAYTON and SHUTTLEWORTH can now execute orders at short notice.

TONITE

IS RECOMMENDED TO CONTRACTORS, MINERS, PIT SINKERS, QUARRYMEN, AND OTHERS, AS BEING THE SAFEST OF ALL EXPLOSIVES.

TONITE is a most efficient and economical blasting agent, and is largely in demand. It is exempt from freezing and the consequent dangerous process of thawing.

THE COMPANY ALSO MANUFACTURE

GELIGNITE, BLASTING GELATINE, &c.
DETONATORS, Suitable for all Classes of Explosives.
ELECTRIC DETONATORS, High or Low Tension.
ELECTRIC APPLIANCES, of all Descriptions.
SAFETY FUSE.

Address—THE COTTON POWDER COMPANY (Limited),
116, QUEEN VICTORIA STREET, E.C.

WANTED.

*** Prepaid Advertisements are inserted in this column at the rate of 8d. per line, with a minimum charge of 4s.

ANALYSTS and MINERALOGISTS, located in Lead, Zinc, Copper, and Silver Mining Districts, in any part of the world, whence ore is or might be shipped to Europe, are INVITED to communicate details and to send their CHARGES for Sampling, Assaying, &c., to "LONDON ORE BROKERS," care of MINING JOURNAL Office, 18, Finch Lane, London, E.C. Good testimonials and references indispensable. Year's buying 150,000 tons.

ARSENICAL ORES AND MATERIAL.
SELLERS are INVITED to COMMUNICATE with W. BEVAN and Co., Arsenic Manufacturers, Swansea.

MINE MANAGER, 20 years practical experience in Gold Mines of California, Idaho, and Mexico, thoroughly conversant with modern methods, DESIRES an ENGAGEMENT. America preferred. Satisfactory London references.
Address, "CITIZEN," MINING JOURNAL Office, 18, Finch Lane, London, E.C.

MINE CAPTAIN REQUIRED for GOLD MINES in South America.
Address, "C. S.," care of LEATHWAIT and SIMMONS, Advertising Agents, 1, Pope's Head Alley, London, E.C.

WANTED, a SITUATION as GENERAL MANAGER of MINES and WORKS. Has large practical experience in Metalliferous Mining, Tin, Copper, Lead, Iron, and other Minerals. Upwards 20 years with last company. First-class testimonials can be produced.
Address, Captain WILLIAMS, M.E., Ballymena, County Antrim, Ireland.

WINFORD OCHRE.
OCHRE is seen in the hedges and roads between Winford Rectory and Felton and Winford, about 100 yards from the top.
Address, Rev. H. TRIPP, Winford, Bristol.

FIRST-CLASS PRACTICAL MINE MANAGER and ENGINEER desires APPOINTMENT in Cold Climate. 25 years colonial experience gold and silver mining and metallurgy.
Address, "MORTAR," MINING JOURNAL Office, 18, Finch Lane, London, E.C.

THE MONTAN ZEITUNG
For Austria, Hungary, and the Balkan States, Graz (Austria), has the largest circulation of any technical paper on the Continent, and
IS THE BEST MEDIUM
to advertise English Machinery and Appliances for
MINING, MANUFACTURING, AND ALL INDUSTRIAL PURPOSES
throughout Austria, Hungary, Servia, Bulgaria, Roumania, Turkey Montenegro, &c.
For general information and scale of Advertisements, apply to
F. MANSFIELD and CO.,
2, Lion Chambers, BRISTOL.

THE GLASGOW HERALD
(ESTABLISHED 1782)
IS THE
LARGEST & LEADING ADVERTISING MEDIUM
OUT OF LONDON.
It is next to *The Times* and *The Daily Telegraph*, each of which it exceeds in extent of Advertising during several months of the year. It is unrivalled among Daily Papers for the completeness of its Reports of the Mining and Metal Markets, besides Commercial and General News for all classes of the community.
HEAD OFFICES: 65-69, BUCHANAN STREET, GLASGOW.
LONDON OFFICES: 65, FLEET STREET.

SHIPPING.

CASTLE LINE.—CAPE & NATAL MAILS.

WEEKLY SERVICE FOR THE GOLD FIELDS OF SOUTH AFRICA.—The CASTLE COMPANY'S STEAMERS leave LONDON (East India Dock Basin, Blackwall) every FRIDAY, and sail from SOUTHAMPTON every SATURDAY.

Steamers.	London.	Southampton.
Dunottar Castle (via Madeira) ...	Mar. 20	Mar. 21
†Harlech Castle (via Canaries) ...	Mar. 27	Mar. 28
Roslin Castle (via Madeira)	Apr. 3	Apr. 4
Drummond Castle (via Canaries)...	Apr. 10	Apr. 11

† Also for Madagascar and Mauritius.

Return tickets to all Ports.
Free Tickets by Castle Express from Waterloo to Southampton.
Apply to DONALD CURRIE and Co., 3, Fenchurch Street, London, E.C.
West End Agency, THOS. COOK AND SON, 13, Cockspur Street.

UNION LINE.

FOR SOUTH AFRICAN GOLD FIELDS.—WEEKLY SERVICE.—CAPE OF GOOD HOPE, NATAL, and EAST AFRICAN ROYAL MAIL STEAMERS.—The UNION STEAMSHIP COMPANY'S ROYAL MAIL and INTERMEDIATE STEAMERS will Sail as follows for SOUTH and EAST AFRICA, calling at MADEIRA and TENERIFFE.

Steamers.	Antwerp.	Rotterdam.	Hamburg.	Southampton.
§Goth (t'n scr w)	—	Mar. 8	Mar. 14	Mar. 21
†Norman (tn sc'w)	—	—	—	Mar. 28
Trojan	Mar. 22	—	Mar. 28	Apr. 4
†Tartar	—	—	—	Apr. 11

† Calling at Madeira. | Via Teneriffe. § Via St. Helena.

Free railway tickets from London and Plymouth to Southampton.
Cheap Tickets are issued for Passengers' Friends.
The Union Line Express is despatched from Waterloo Station (Main Line Platform) every Saturday.
RETURN TICKETS ISSUED.
Apply to the UNION STEAMSHIP COMPANY (Limited), Canute Road, Southampton; 14, Cockspur Street, London, S.W.; and South African House, 94 to 96, Bishopsgate Street Within, London, E.C

SALE BY AUCTION.

*** Advertisements are inserted in this column at the rate of 8d. per line with a minimum charge of 4s.

FARLEY COLLIERY, PONTESBURY, SALOP.

MESSRS. R. P. PRICE AND SON are favoured with instructions to offer the above VALUABLE COLLIERY for SALE by PUBLIC AUCTION, as a GOING CONCERN, at the Clarendon Hotel, Shrewsbury, on WEDNESDAY, the 25th day of March, 1896, at Three for Four o'clock in the afternoon (subject to conditions which will then be produced).

The Mine, which is within a mile and a-half by road of Pontesbury Railway Station, has two shafts, 7 feet 6 inches, and 6 feet 6 inches diameter, and 140 yards deep. It is entirely free from gas, and has a rock roof probably unequalled for stability.

The coal, of which there are two seams, is good household, and there is a good bed of superior fire-clay.

The Royalty is 6d. per ton for coal, 3d. per ton for slack, and on other minerals equally low.

The Machinery comprises 30 h.p. modern horizontal direct action winding engines (capable of raising 20 tons per hour), pump with iron lift worked by powerful high pressure engines, three boilers, capstan engine, weigh-bridges, &c.; together with horses, carts, wagons, and every requisite for such a colliery, the whole of which will be included in the sale as a going concern.

There is a ready local market for the sale of the coal.

Such an opportunity for the purchase of a Colliery in thorough working order is seldom offered, and a purchaser can rely on a high return for his capital.

For further particulars, and card to view the Colliery as now working, apply to the AUCTIONEER, Shrewsbury; or to
W. S. SALT, Solicitor,
St. Mary's Court, Shrewsbury.

BUSINESS CARDS.

AERIAL ROPEWAYS.
"OTTO" SYSTEM.
R. E. COMMANS (late Commans and Co.), 6, Queen Street Place, London, E.C.

ASBESTOS.
THE UNITED ASBESTOS COMPANY (Limited), Dock House, Billiter Street, London, E.C. Asbestos Goods of the highest quality.

AUSTRALIAN MINERALS.
COLLECTIONS of AUSTRALIAN MINERALS for Show Case, or for technical purposes supplied to order. Price from £2 2s. upwards On receipt of order with remittance a collection will be made up and dispatched without delay.
MINES REPORTED ON.
J. B. AUSTIN, Mineralogist, Adelaide, S.A.

CONCENTRATORS.
THE CLARKSON-STANFIELD CONCENTRATOR (Limited). New system for the treatment of gold, silver, copper, lead, and other ores. Address, 6, Colonial Avenue Minories, London, E.

EXPLOSIVES FOR MINING.
NOBEL'S EXPLOSIVES COMPANY (Limited). Glasgow. Manufacturers of Gelignite, Gelatine-Dynamite Dynamite, Detonators, Electric Detonator Fuses, &c., &c.

MAGNETIC ORE SEPARATORS
(KING'S PATENT.)
FOR SEPARATING IRON ORE FROM OTHER MINERALS.
Apply, FREDK. J. KING, 96, Leadenhall Street, London.

METAL PERFORATORS, &c.
J. & F. POOL,
METAL PERFORATORS & WIRE WEAVERS.
COPPERHOUSE, HAYLE, CORNWALL.
SPECIALITIES:—All descriptions of Perforated Metal Plates Stamps' Battery-Screens, Wire Gauze and Sieves for Foreign and Home Mining, and other Purposes. Export orders carefully and promptly executed.

MINING ENGINEERS.
F. M. KRAUSE, F.G.S., F.L.S., (formerly of the Geological Survey of Victoria, late Professor of Geology and Mining at the School of Mines, Ballarat), Examines and Reports upon Mines and Mineral Lands. May be consulted by Shareholders and intending Investors in Australian Mining Properties.
18, Temple Court,
Collins' Street, Melbourne,
Victoria, Australia.

E. HENRY DAVIES, F.G.S.,
CONSULTING MINING ENGINEER,
6, GREAT WINCHESTER STREET, LONDON, E.C,
Author of "Machinery for Metalliferous Mines."
Joint Author of "Metalliferous Mines and Mining."
"Earthy and other Minerals and Mining."
Undertakes the INSPECTION and MANAGEMENT of MINES at home and abroad, and the introduction of approved Properties to Capitalists. Minerals of all descriptions purchased in large or small quantities.

COLORADO MINING AND OTHER INVESTMENTS.
THOMAS TONGE, DENVER, COLORADO.
SPECIALITIES—Gold Properties; Leasing and Development Syndicates.
CABLE: "TONGE, DENVER." Code, "A B C," Fourth Edition.

MINING INSTRUMENTS.
JOHN DAVIS & SON, All Saint's Works, Derby; and 118, Newgate Street, London, Mathematical instruments and miner's safety lamps.

MINING MACHINERY.
FRASER & CHALMERS (Limited), 43, Threadneedle Street, London, E.C. Mining machinery of the most approved design.

ROBEY & CO. (LIMITED), Manufacturers of Steam Engines, Mining Machinery, &c. Makers of the Robey Patent Automatic Expansion Gear.—Globe Works, Lincoln.

GATES IRON WORKS, 73A, Queen Victoria Street, E.C. The Gates Rock and Ore Breaker effects a great saving in power.

ORE DRESSING MACHINERY.
THE LÜHRIG COAL AND ORE DRESSING APPLIANCES (LIMITED),
32, VICTORIA STREET, LONDON, S.W.
COMPLETE DRESSING PLANTS for Gold, Silver, Lead, and Copper Ores, &c., designed and erected.
LÜHRIG SINGLE AND COMPOUND VANNERS for Low Grade Ores and Tailings.
IMPROVED BREAKERS, ROLLS, JIGS, AND SEPARATING DRUMS.
Tests made with Samples at London Works Free of Charge.

ROCK DRILLS.
RICHARD SCHRAM & CO, 17a, Great George Street, Westminster, S.W.

STONEBREAKING MACHINERY.
W. H. BAXTER, Engineer, Leeds. Stone-breaking and Ore-crushing Machinery. All highest awards received for 12 years. Guaranteed for economy in power, efficiency and durability over all others. Catalogues free.

TUBE MAKER.
GEO. J. CHATTERTON, manufacturer of lead pipe, block tin pipe, and tinned composition gas tube, Caledonian Road, London, N

TURBINES
G. GILKES and CO., Kendal Makers of The Vortex Turbine.

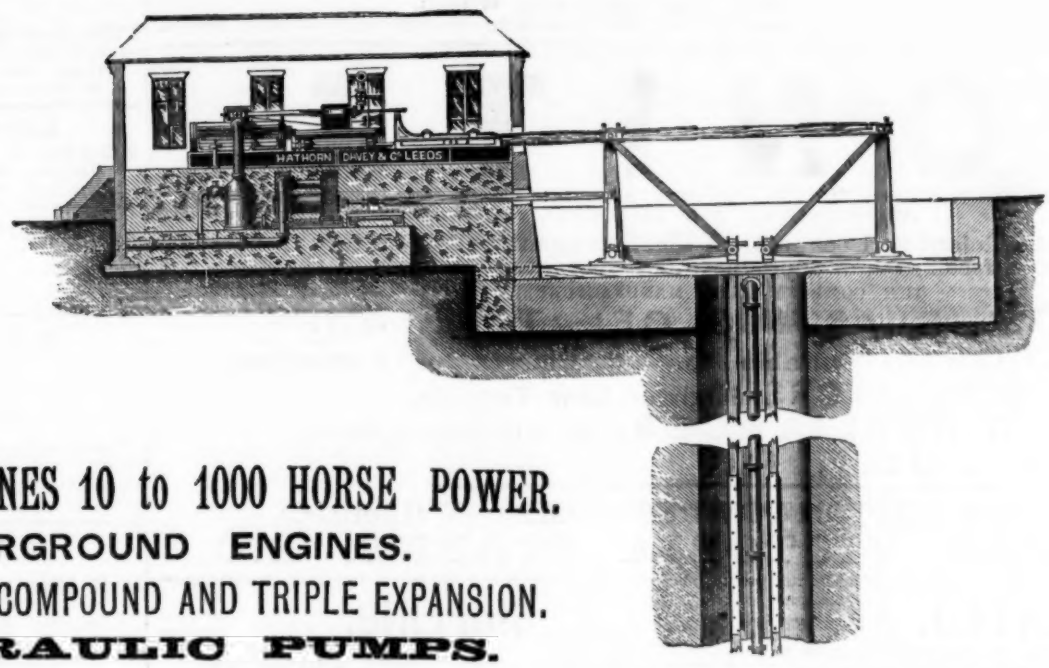
HATHORN, DAVEY & CO.,

LEEDS.

The DAVEY PUMPING ENGINE for DRAINING MINES

Is in use all over the World, and unquestionably has proved itself to be without a rival in SAFE and EFFICIENT WORKING and ECONOMY.

REGISTERED TELEGRAPHIC ADDRESS:



"HATHORN, LEEDS."

SURFACE ENGINES 10 to 1000 HORSE POWER.
UNDERGROUND ENGINES.
STEAM PUMPS, COMPOUND AND TRIPLE EXPANSION.
HYDRAULIC PUMPS.

DRAINAGE PUMPS. WATER WORKS PLANT. DOCK MACHINERY, CAPSTANS, &c.

CATALOGUES ON APPLICATION.

PUBLICATIONS.

"." Prepaid Advertisements are inserted in this column at the rate of 8d. per line, with a minimum charge of 4s.

WORKS on MINING, METALLURGY, and ALLIED SUBJECTS.

A Hand-Book of Gold Milling. By HENRY LOUIS, A.R.S.M., F.G.S., &c. Crown 8vo., 10s. net.

The Golden Quartz Reefs of Australia. By WILLIAM NICHOLAS, F.G.S., with Illustrations. A series of Articles especially relating to the Bendigo Gold Field, Victoria. 2s., Post Free.

A New Guide to the Iron Trade, or Mill Managers' and Stock Takers' Assistant. By JAMES ROSE, of Batman's Hill Iron Works. Second Edition. Comprising a Series of New and Comprehensive Tables, practically arranged to show at one view the Weight of Iron required to produce Boiler Plates, Sheet Iron, and Flat, Square, and Round Bars, as well as Hoop or Strip Iron of any dimensions, to which is added a variety of Tables for the convenience of Merchants, including a Russian Table. 2s. 6d.

The Colliery Ready-Reckoner and Wages Calculator. By JAMES IRELAND. 1s. 6d., Post Free.

Tacknote: a Form of Licence to Explore and Search for Mines, Minerals, &c. 1s., Post Free.

Notes on the Philippine Islands: A Pamphlet Reprint. By FRANK KARUTH, F.R.G.S. 6d.

History of the Holmbush, Redmoor, and Kelly Bray Mines; with Several Sections of the Workings. By W. F. WILKINSON, 1s.

The Law of Merchandise Marks. By FRANK SAFFORD, Recorder of Canterbury, and a Member of the London Chamber of Commerce. 7s. 6d.

LONDON:
THE MINING JOURNAL,
18, FINCH LANE, E.C., and
3, DORSET BUILDINGS, SALISBURY SQUARE, E.C.

JUST PUBLISHED

SECOND EDITION.

STANLEY'S TREATISE
ON
SURVEYING AND LEVELLING INSTRUMENTS.

RE-WRITTEN UP TO DATE WITH NEW MATTER.

PRICE 7s. 6d., POST FREE.

E. and F. N. SPON, 125, STRAND, LONDON.

THE LIXIVIATION OF SILVER ORES
WITH
HYPOSULPHITE SOLUTIONS.
By C. A. STETEFELDT.
SECOND EDITION. COMPLETELY REVISED.
With Two Plates showing Construction of a LIXIVIATION PLANT. Published and Sold in the United States and Mexico by the Author, 967, ALICE STREET, OAKLAND, CALIFORNIA.
Price, bound in Cloth, $5.
For all other countries the Sale is conducted by
CRAZ and GERLACH (Joh. Stettner), Freiberg in Sachsen, Germany.
Price 20s. net.

Watch this Advertisement

Every other week.

PARKIN'S
INDICATING SIGNAL BELLS

Are a SURE SAFEGUARD for Enginemen against winding without signal.
The Index stands at 0 till the signal is given, when it points to the number of strokes on the Bell.
Entirely Self-Acting. Steel Fittings.
Prices and particulars,
PARKIN'S SIGNAL WORKS, LIVERSEDGE, YORKS.

SOLE AGENTS FOR SCOTLAND:
Messrs. ARCHD. BAIRD and SON,
59-61, WATERLOO STREET, GLASGOW.
Export Agent—Mr. STEPHEN HUMBLE, Junr.,
Emerson Street, Southwark, S.E.

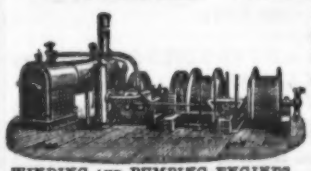
THE WEST BRITON AND CORNWALL ADVERTISER.
The best Family Newspaper for Cornwall and the West of England generally.
MONDAY AFTERNOON, 4 Pages, One Halfpenny.
THURSDAY AFTERNOON, Pages, 56 Columns, One Penny.
The Largest and Most Influential Journal of Cornwall.
The Best Advertising Medium in the West of England.
The Largest Circulation of any Cornish Newspaper.
The "WEST BRITON" contains more reliable information respecting Cornish Mines than any other Newspaper
HEARD and SONS, Publishers, Truro.

CORNISH POST AND MINING NEWS
A HIGH-CLASS UNIONIST NEWSPAPER.
Specially devoted to Cornish Mining, upon which it contains the fullest and most reliable information published. It is the only eight-paged newspaper printed in the Mining Division of Cornwall.
ISSUED EVERY THURSDAY and SATURDAY,
PRICE ONE PENNY.
The Cornish Post and Mining News Co. (Limited)
East Charles Street, Camborne, Cornw ll

MACARTHUR-FORREST PROCESS.

TO MINE OWNERS AND OTHERS
Having REFRACTORY GOLD ORES hitherto untreatable at a profit, the MACARTHUR-FORREST (PATENT) PROCESS OF GOLD EXTRACTION offers a solution of the difficulty.
The chief features of this Process are:—
SIMPLICITY, ECONOMY IN WORKING, and SMALL COST of PLANT.
PROPRIETORS:—
The Cassel Gold Extracting Co. (Ltd.)
Head Office—108a, Hope Street, Glasgow.
London Office—23, College Hill, Cannon Street, E.C.
Africa—The African Gold Recovery Co. (Ltd.), Johannesburg.
Australia—The Australian Gold Recovery Co. (Ltd.), 8, Post Office Chambers, Sydney, N.S.W., Charters Towers, Queensland, and Mr. Geo. S. Fowler, J.P., Adelaide.
United States—The Gold and Silver Extraction Co. of America (Ltd.), Denver, Colo.
Mexico—The Mexican Gold and Silver Recovery Co. (Ltd.), 2a, Calle de Providencia, No. 7, Mexico City, Mexico.
Chili—Mr. J. A. W. Murdoch, Calle Almendro, Valparaiso.
New Zealand—The Cassel Gold Extracting Co. (Ltd.), 6, Herald Buildings, Queen Street, Auckland.
Canada—Mr. W. Pellew Harvey, F.C.S., 717 and 719, Pender Street, Vancouver City, British Columbia.
The CASSEL GOLD EXTRACTING Co. (Ltd.) are manufacturers of CYANIDE, suitable for the MacArthur-Forrest Process.
For terms, apply at Head Office of the Company,
108a, Hope Street, GLASGOW.

MINING MACHINERY.



CRUSHING ROLLS.
STAMP BATTERIES.
QUARTZ BREAKERS.
CONCENTRATORS.
WINDING AND PUMPING ENGINES.
JULIUS HARVEY AND CO.,
11, Queen Victoria St.,
Telegrams: Crosshead, London. LONDON, E.C.

ROBURITE No. 3.

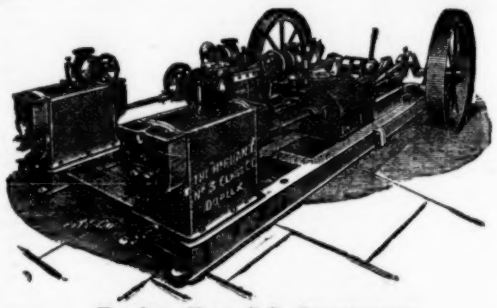
The Cheapest, Best, and Safest Explosive for Coal Mines,

QUARRIES, METALS, AND CONTRACTORS' WORK.

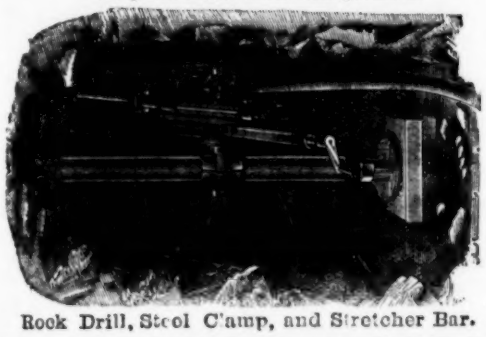
SAVES TIME, LABOUR, AND LIVES.

THE ROBURITE EXPLOSIVES COMPANY, LIMITED,

103, CANNON STREET, LONDON, E.C. Works: GATHURST, near WIGAN.



Duplex Class C.C. Compressor.



Rock Drill, Steel Clamp, and Stretcher Bar.

THE PATENT "HIRNANT" MINING PLANT,
ROCK DRILLS, ROCK DRILL CARRIAGES,
AIR COMPRESSORS, STRETCHER BARS,
COLUMNS, CLAMPS, AIR PIPES, &c.
NEW PATENT SINKING CARRIAGE,
THE MOST RELIABLE MACHINERY KNOWN.

SOLE PROPRIETORS AND MAKERS:

THOMAS LARMUTH AND Co.,

Salford, Manchester.

INTENDING PURCHASERS WAITED UPON PERSONALLY.

Agents for South Africa, Messrs. REUNERT and LENZ, Johannesburg.

The Head does not revolve when Crushing.

EXTERIOR VIEW—Showing Crushing Head.

Manufacturers of Mining Machinery and complete Macadam Plants.

GATES ROCK AND ORE BREAKER.

Capacity in Tons of 2000 Pounds.

Size 0—2 to 4 tons per hour.	Size 3—10 to 20 tons per hour.	Size 6— 30 to 60 tons per hour.
„ 1—4 to 8 „ „	„ 4—15 to 30 „ „	„ 7— 40 to 75 „
„ 2—6 to 12 „ „	„ 5—25 to 40 „ „	„ 8—100 to 150 „

Passing 2½ in. ring, according to character and hardness of material.

GREAT SAVING IN POWER. Adjustable to any Degree of Fineness.

The principle involved in this Breaker acknowledged to be the greatest success ever introduced into Stone Breaking machinery.

Send for Catalogue, containing over 500 references of Contractors, Miners, Railway Companies, Cement Makers, etc.

By the use of this machine cubical road metal can be produced at a low cost.

GATES IRON WORKS (A)

73a, QUEEN VICTORIA STREET, E.C., LONDON, ENGLAND.
136, Liberty Street, New York.
WORKS: 650, Elston Avenue, Chicago, U.S.A.

Improved Cornish Rolls & Screens.

COMPLETE CYANIDE PLANTS.

THE HUMBOLDT ENGINEERING WORKS Co., KALK, NEAR COLOGNE.

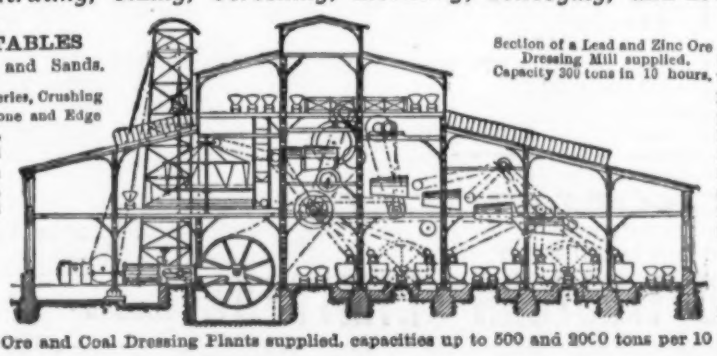
MAKERS OF MINING, ORE DRESSING, & COAL WASHING PLANT.

Reducing, Concentrating, Sizing, Screening, Elevating, Conveying, and Loading Machinery.

PATENT LINKENBACH TABLES
For enriching Slimes and Sands.

Stone Breakers, Stamp Batteries, Crushing Rolls, Disintegrators, Burr Stone and Edge Runner Mills, Schrans', Roberts's, Umfrid's, Ball and other Mills, Trommels, Jiggers, Ruff Wheels, Spitzkasten, Spitzluten, Percussion, and Belt Tables.

PERFORATED PLATES.
All kinds, in all Metals.



Section of a Lead and Zinc Ore Dressing Mill supplied. Capacity 300 tons in 10 hours.

HIGH-CLASS ENGINES,
Steam Boilers, Ironwork, Winding, Hauling, and Pumping Plant, Air Compressors, Percussion and Rotary Rock Drills, Guibal Fans, Ventilators, Cages, Skips, Keeps, Tipp'ers, Conveyers, Elevators, Lifts, Picking Tables and Bands, Spiral Screens, Chain Haulage.

EXPERIMENTAL PLANT
For testing Ores, &c., at Kalk.

Over 300 complete Ore and Coal Dressing Plants supplied, capacities up to 500 and 2000 tons per 10 Hours, respectively.

EL MINERO MEXICANO.

The Mining and Industrial Journal of Mexico,
ESTABLISHED 1873.
Published in the City of Mexico every THURSDAY, in the Spanish Language.
Taken by Mine Owners, Capitalists, Manufacturers, Merchants, the richest and most liberal people, all over Mexico.
THE BEST ADVERTISING MEDIUM.
MEXICAN PATENT & TRADE MARK AGENCY,
A, Independencia No. 1, City of Mexico.
RICHARD E. CHISM, M.E., Editor and Proprietor.

THE IRON AND COAL TRADES' REVIEW

With which is Incorporated
The Bulletin of the British Iron Trade Association.
The IRON AND COAL TRADES REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coal Owners, &c., in all the Iron and Coal Districts. It is, therefore one of the Leading Organs for Advertising every description of Iron Manufactures, Machinery, New Inventions and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: 222-225, Strand, W.C.
Remittances payable to W. SHAW.

Awarded the ONLY Gold Medal for Stonebreaker at the International Inventions Exhibition, in competition with all other makes.

THE BLAKE-MARSDEN 1884 Patent

Lever Hand-Hammer Action Stonebreakers and Ore Crushers,

NEW PATENT FINE CRUSHER OR PULVERIZER.

Fitted with Patent Reversible Cubing and Crushing Jaws in Five Sections, and with Surfaced ocks, requiring no White Metal in fixing. Crucible Cast Steel Levers and Toggle Cushions, ass or Gun Metal Bearings throughout.

Positive Draw Back Motion taking no power to work, and entirely dispensing with the old expensive Steel Embedded I.R. Spring. The motion or length of Stroke of the Jaw can be increased or decreased at pleasure, to suit any material.

OVER 5000 IN USE.

70 First-Class Gold and Silver Medals

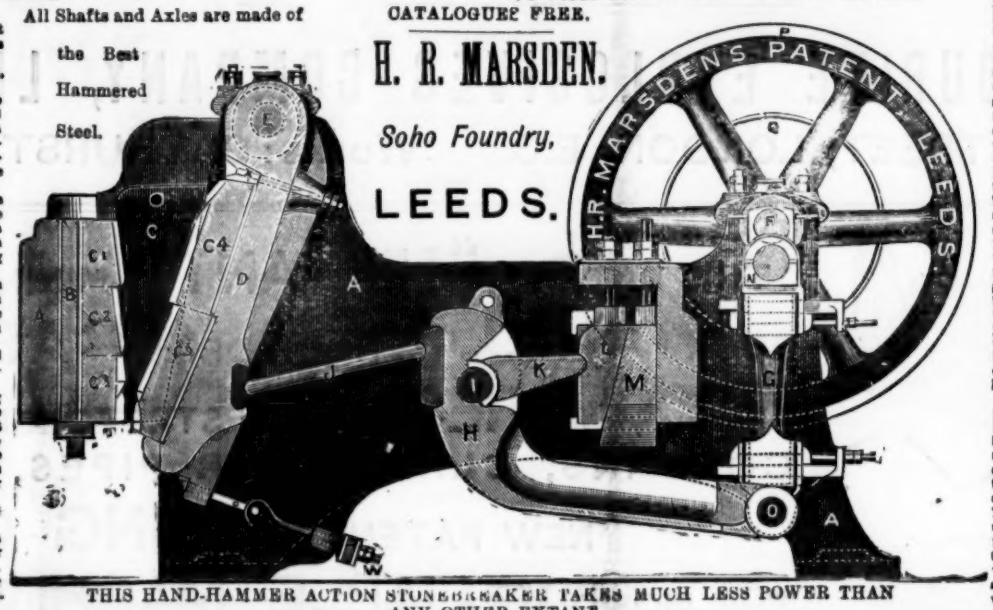
CATALOGUES FREE.

All Shafts and Axles are made of the Best Hammered Steel.

H. R. MARSDEN.

Soho Foundry,

LEEDS.



THIS HAND-HAMMER ACTION STONEBREAKER TAKES MUCH LESS POWER THAN ANY OTHER EXTANT.

PULVERIZER TESTIMONIAL

The Fine Crusher we had from you in August last is an excellent pulverizer, and rapidly reduces hard material to a fine powder."

"The Pulverizer has now been working two months, and answers its purpose most satisfactorily."

"It is with the greatest satisfaction that we write these few lines in order to acquaint you that the 12×3 Pulveriser you provided us with, has quite fully given the results you represented to us, completely reducing our material to an impalpable powder at one operation. Should you refer any one to us we should have much pleasure in recommending the machine."

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12×3 Pulverizer we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverising that we have ever met with"

"The reports from our mines as regards the working of your Fine Crusher (20×5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried by hand, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might say how long you would take to liver another of the same size."

"As I once before stated, your machine is a perfect pulverizer."

I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

STONEBREAKERS AND ORE CRUSHERS TESTIMONIALS.

"We have great pleasure in testifying to the efficiency of the 15 in. by 8 in Lever Hand Hammer Motion Stone Breaker you supplied us with. We find that our 4 h-p. Engine with ease drives it 330 revolutions per minute, and breaks six tons per hour of the hardest "Diorite" Whinstone: the sample is much before any hand-broken we have ever got done. Our Mr. P. J. GRAHAM, C.E., who was Surveyor of Highways for ten years, before joining our firm, says: It is by far the most economical machine he ever had to do with; he had two of your former make, and two of another firm's make; compared with these four machines your new patent gives the following advantages:—The horse-power required to drive is exactly 40 per cent. less. The sample of the broken macadam is so far superior to that broken by other machines, and even to that broken by hand that we can make no comparison. I is by far the best macadam we have ever seen."

"I now order three of your Stone Crushers, size 15 by 10, to be of your very best construction, and to include two extra sets of Jaws and Cheeks for each. The last two 24×13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference of the high character of your constructions you can refer to me as having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible. I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased seven from you at various intervals and various sizes, and two above 12 years ago, and having tried all the other makers is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."

From His Grace the Duke of Rutland.
Belvoir, Grantham,
December 1st, 1879.

SIRS,—Elliman's Royal Embrocation is used in my stables; I think it very useful.
RUTLAND.
Master of the Belvoir Hounds.

From the Earl of Harrington.
January 9th, 1889.

SIRS,—Elliman's Royal Embrocation is used in my stables, and I consider it the best that I can obtain. HARRINGTON.
Master of the South Wilts Hounds.

From Major M. J. Balfe,
South Park.
June 16th, 1892.

SIRS,—Elliman's Royal Embrocation is used in my stables, and I can highly recommend it.
M. J. BALFE.
Master of the Roscommon County Staghounds.

ELLIMAN'S ROYAL EMBROCATION

"AN EXCELLENT GOOD THING."
ELLIMAN'S ROYAL EMBROCATION
BOTTLES 2/ 2/6 3/6
JARS 10/6 20/-
ECONOMY IN THE STABLE.
Prepared only by ELLIMAN SONS & Co. SLOUGH, ENGLAND.

USING ELLIMAN'S EASIER HAULAGE

From Lord Haddington, Tyningham, Prestonkirk, N.B.
December 27th, 1885.

SIRS,—Elliman's Royal Embrocation is used in my stables, and I consider it indispensable in any stable, but especially in the stable of a Master of Hounds.
HADDINGTON.
Master of the Berwickshire Hounds.

From R. Burdon Sanderson, Esq., Warren House, Belford
July 10th, 1892.

SIRS,—Elliman's Royal Embrocation is used in my stables and I consider it very useful.
R. BURDON SANDERSON.
Master of Percy Foxhounds.

From Wm. J. Buckley, Esq., Penyfai, Llanelly.
July 16th, 1892.

DEAR SIRS,—I have much pleasure in recommending your Royal Embrocation. I always keep a stock in my stables and kennels. My farm bailiff has also found it of much value among my herd.
WM. J. BUCKLEY.
Master of Carmarthenshire Foxhounds.

BENNETT'S

"CROWN BRAND"

FUSE.

Sold under Copyright Label bearing Trade Mark.

A Distinguishing Feature in these Goods is THREE SEPARATE CENTRE THREADS IN THE COLUMN OF POWDER. The make may always be recognised by these Threads, and users are cautioned to look for them and see that they have the Genuine Article.

MANUFACTURED BY

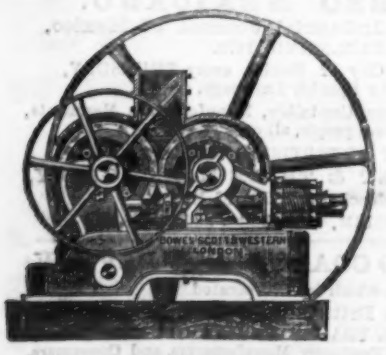
WILLIAM BENNETT, SONS, & Co.,
ROSKEAR FUSE WORKS,
Camborne, Cornwall.

TELEGRAMS: FUSE, CAMBORNE.

THOMAS SMITH & SONS OF SALTLEY, LIMITED,
BIRMINGHAM.

WILLIAM SMITH, Managing Director.

Manufacturers of Drop Forged Engineers' and other Spanners, Drop Forgings, Hand Forgings, Pressed Work and Machined Work of every Description; Hammers, Heavy Lever Tools, Heavy Chest Tools, Tools for Engineers, Plate Layers, Miners, &c. Coach and Railway Wheelbarrows, Scrapers, Picks, Eyebolts, Bolts, and Nuts.



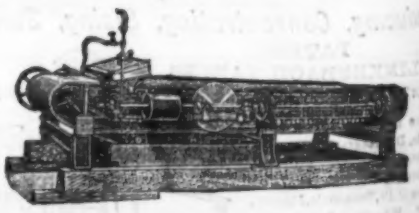
MINING MACHINERY.

VANNERS.
JIGS.
AMALGAMATING PANS.
SETTLERS & CLEAN UP PANS.
SCREENS OF ALL KINDS.

CRUSHING ROLLS.
STAMPS.
BALL MILLS.
ROASTING AND WATER JACKET-FURNACES.

AMALGAM RETORTS &c.

ENGINES SINGLE & COMPOUND, BOILERS OF ALL KINDS, TURBINES, &c.



SOLE LICENSEES AND MANUFACTURERS OF

"Patent" KROM ROLLS.

FOR FINE CRUSHING.

ASSAYS CONDUCTED

BOWES SCOTT AND WESTERN (LIMITED).

OFFICE:
Broadway Chambers,
WESTMINSTER.
Telegraphic Address: "DONBOWES, LONDON."

SAMPLING WORKS,
Phœnix Wharf,
Church Road,
BATTERSEA.

EDITORIAL AND ADVERTISEMENT OFFICES:—13, FINCH LANE E.C.
Printed for the Registered Proprietors by JOHN ROBERT GALE, at their Printing Offices, 3, DORSET BUILDINGS SALISBURY SQUARE, in the Parish of St. Bride's, in the City of London.—*Mar* 14